# VDSL Systems Strategy Report

## VDSL Systems Strategy, VDSL Blueprint, Frameworks, and Organization

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VDSL

March 12, 2000
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B - VDSL Framework Change Process
C - VDSL System Plan
D - Program Office Audit Review Area

# Introduction

## What was done:

This document updates the **current status** of the VDSL Systems Strategies presented in November '99, as well as **featuring VDSL Business Processes and Nine VDSL frameworks**.

- **Repair**
- **Trouble Ticketing**
- **Construction & Engineering**
- **Order Entry**
- **Inventory**
- **Activation**
- **Product Ordering Assurance**
- **Fault Management**
- **Product Qualification**
- **Provisioning**

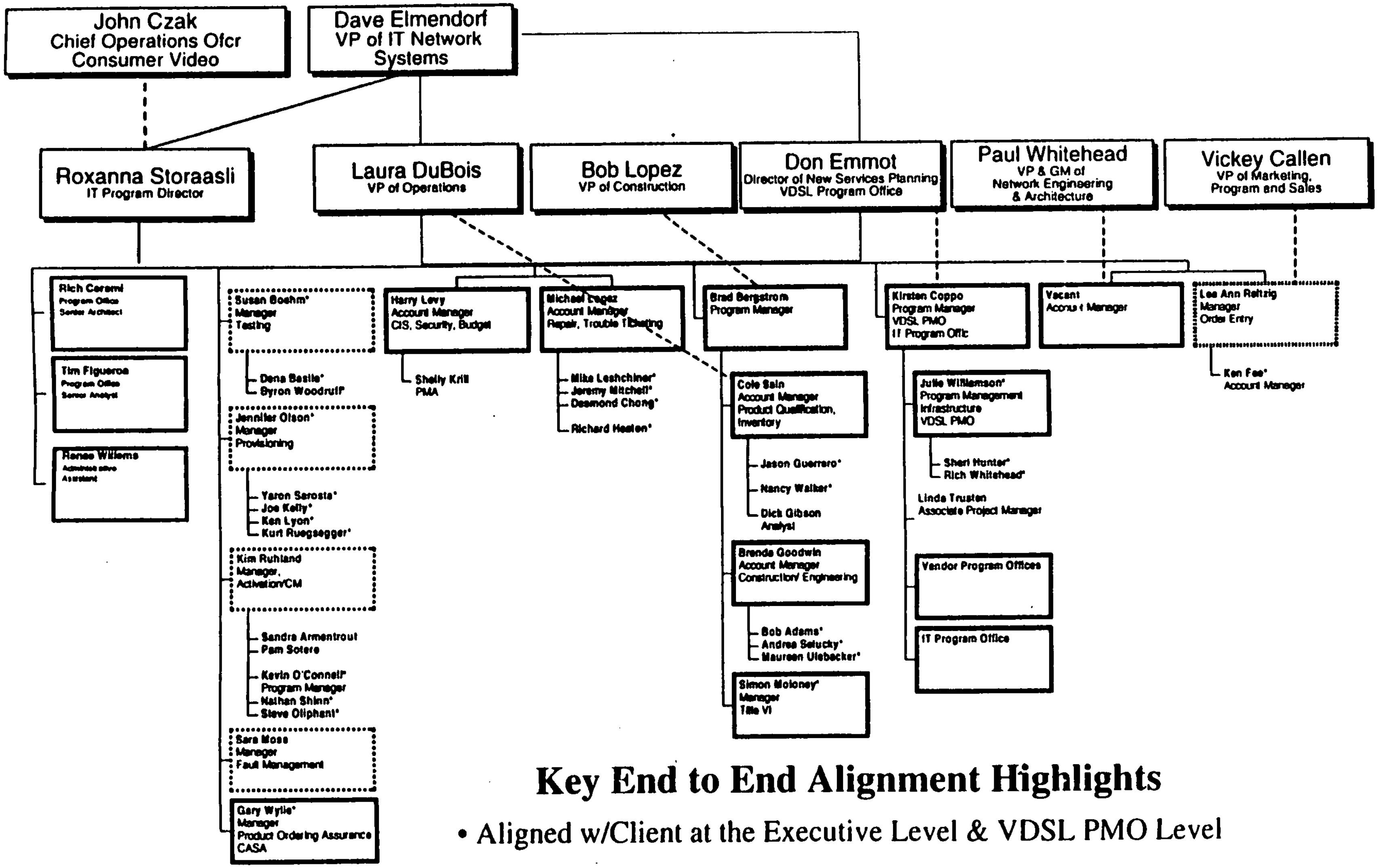
The the featured Business Processes highlight current implementation, business needs and the ability to scale. Each business process details, at a high level, the opportunities for improvement, resolution strategies and impact & issues. This analysis does not propose an optimal state but rather recommends interim term options for resolving immediate VDSL concerns.

## How it was done:

Data was gathered by visits to the TOC, MMOC and VDOC, as well as interviews with key leaders, technicians, stake holders and organizations; all of which provided documentation used in this report.

Feature Area: The Organization

# VDSL Systems Organization



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Vendor Program Offices

IT Program Office

Vacant
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Manager
Order Entry

- Ken Fee*
  Account Manager

## Key End to End Alignment Highlights

- Aligned w/Client at the Executive Level & VDSL PMO Level
- Aligned w/IT Software Development at the VDSL PMO Level
- Aligned w/Vendors at the VDSL PMO Level

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PMO = Program Management Office

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# VDSL Program Accomplishments

## *VDSL Blueprint*

- 92% complete on Framework Analysis and Planning (working on Fault Mgmt., Loop Qual. & Sec.).
- We have identified and prioritized 38 key initiatives with a15 initiative quick hits sub-list that support accelerated VDSL rollout plans.

## *Program Office*

- Adding resources in Account Management and Development, Business requirements are underway, deliverables and timetables have been identified, additionally development teams have been engaged.
- Producing Q14, Q13 and work with Development on Q10 detailed project documentation
- The VDSL Program Office will manage using standardized methodologies & tools to report on program status and deliverables.
- The VDSL Program office is developing procedures for Tracking and Scheduling, Financial Management, Issue Management and Risk Management, Resource Management, Quality Management, Stakeholder Management and Third Party Relations.
- Developing mitigation strategy for each VDSL Framework Initiative.
- Leading Title 6 Business process, training and requirements development.
- Leading Business process, Gaps Analysis and Tools trials for Client.

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# VDSL Status

## Accomplished to Date:

### Development

- Briefed Development Leadership in VDSL Program, Architectural Blueprints, Initiatives and Accelerated Roll Out Plans, as well as VDSL development wish list and needs.
- Architecture Reviews in progress.
- Project Office Identification and Staffing for each VDSL Framework in progress.
- Quick Hits Teams and Development Project Office build in progress
- Initiative Architecture Reviews being Scheduled

### Next Steps

- Commission Executive Steering Committee
- Q10 deliverables from Development
- Validation of priority deliverables with Client
- CIS expansion for Multiple City Footprint build-out
- Acquire and Assign Budget
- Continue and Complete VDSL Roadshows

Section I - Status

# VDSL Scalability

- **Current VDSL Systems Scale Points**
  - Manual Processes
  - Non-integrated Systems
- **Resolving Scalability issues will result in Benefits**
  - Accelerated Mass Market Roll Out
  - Cost Reduction
  - Quality

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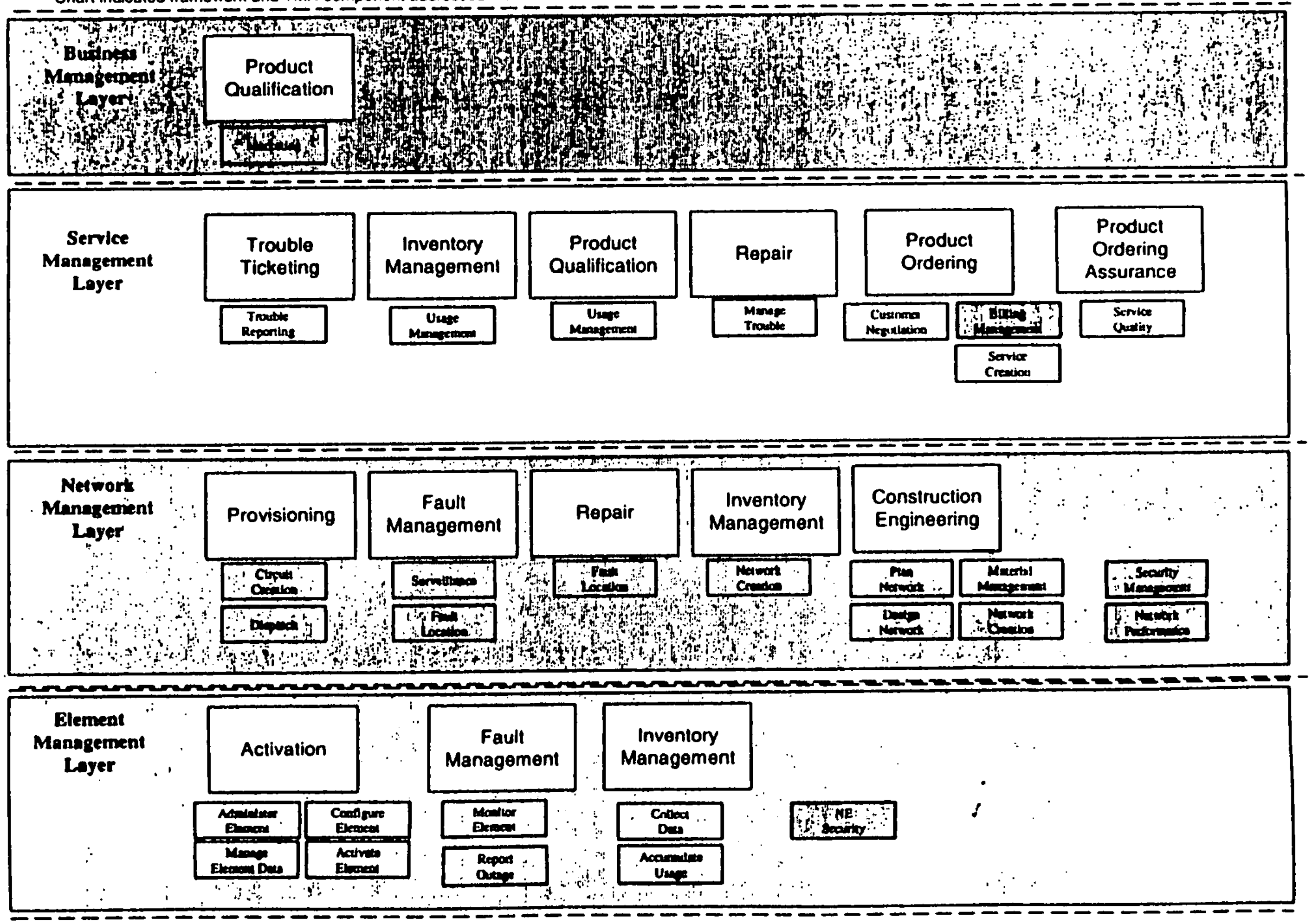
Rich C[illegible]
Jim [illegible]

## Section I - Status

# VDSL TMN View

**xDSL Blueprint mapped to TMN**

Chart indicated framework and TMN component addressed within framework



Ver 2.0

▨ Not addressed in Blueprint

Adaptation of the TMN model for defining technology areas is a critical factor. It also serves to *template organizational resources.*

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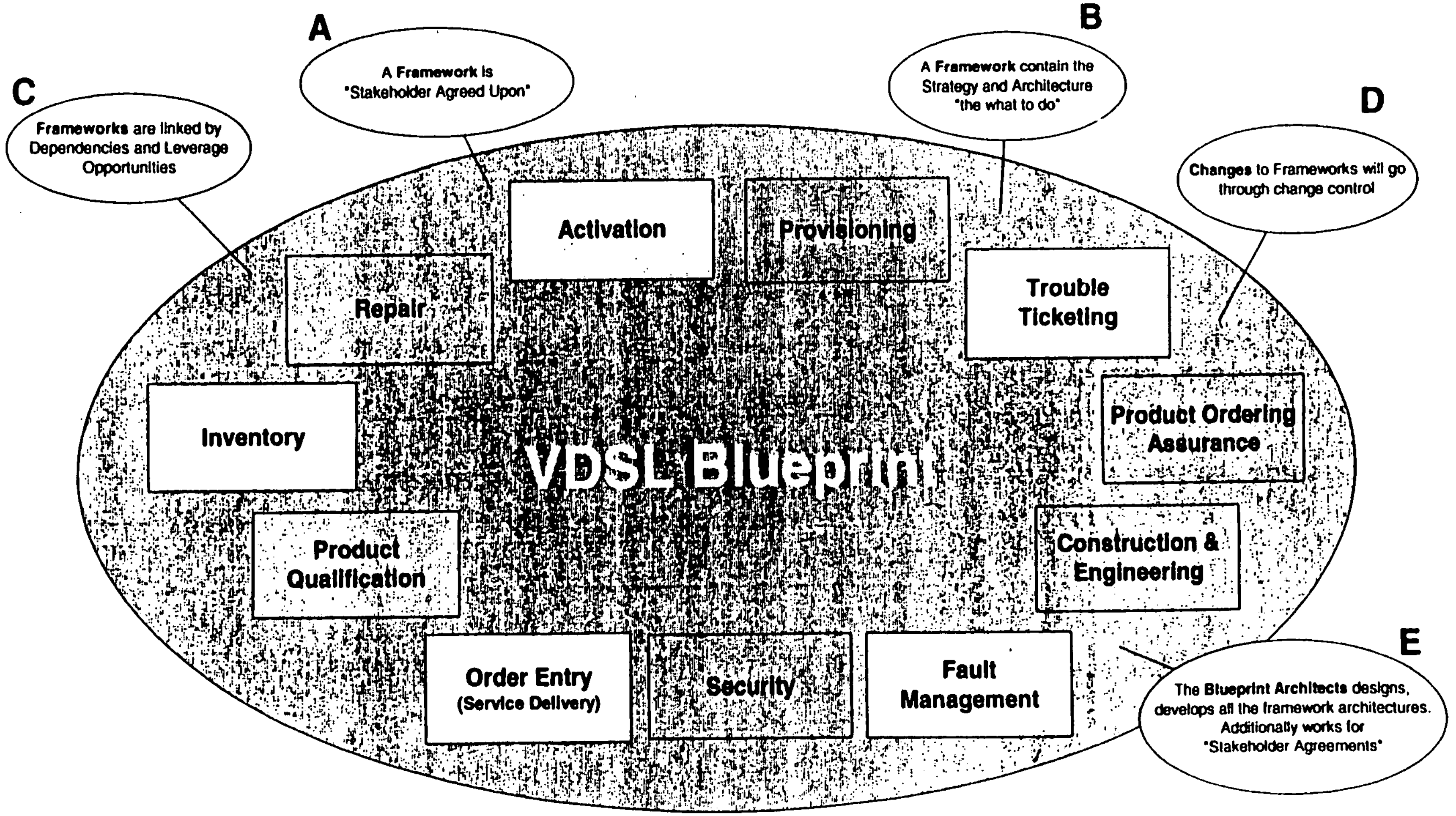
**VDSL Systems Strategy Overview**
This graphic does not imply a framework hierarchy

## Section I - Status

# VDSL Blueprint



- The Blueprint is the master plan that takes into account the Business Need
- The Framework structure breaks down the work into Manageable Portions

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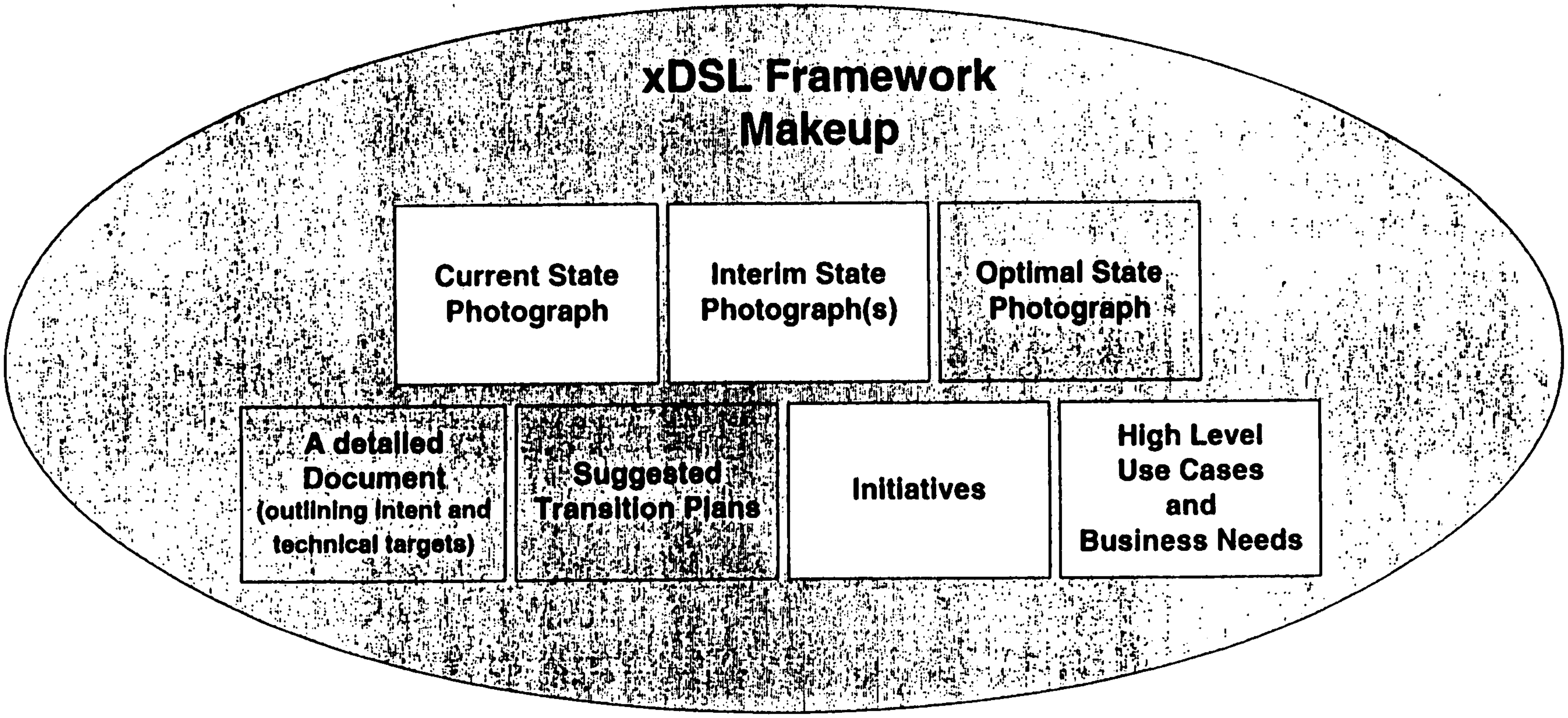
# VDSL Framework



xDSL Framework Makeup

Current State Photograph

Interim State Photograph(s)

Optimal State Photograph

A detailed Document (outlining intent and technical targets)

Suggested Transition Plans

Initiatives

High Level Use Cases and Business Needs

- Where we are (Current State)
  - Where we are going (Interim & Optimal State)
    - How to get there (Transition Planning & Initiatives)
      - Additionally when, cost, impacts and risks

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# VDSL Budget

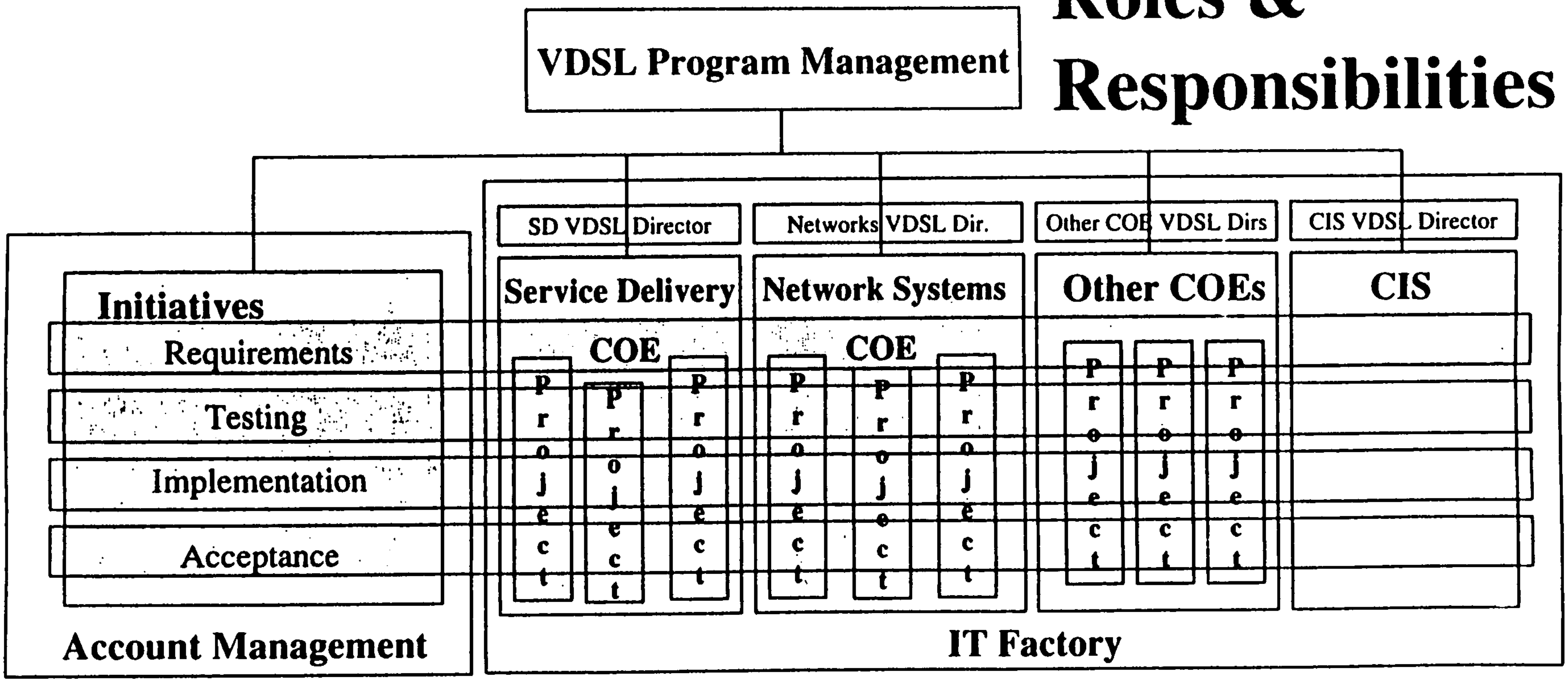
## Budget Management

- VDSL - $100 million
- Management Tool: BMS
- Management Process:
  - Q 13: Create initiative level budgets in BMS as "projects" (AM Accountable)
  - Q 10: Create project level budget in BMS as "sub-projects" under related initiatives (Software Development PM accountable)
  - Perform monthly reviews of budgets with Executive Review Board (IT, Finance, Client)
- Change control process managed by VDSL PMO

## Next Steps

- Work with Software Development project offices for budget allocation and process definition

# Roles & Responsibilities



VDSL Program Management

SD VDSL Director

Networks VDSL Dir.

Other COE VDSL Dirs

CIS VDSL Director

Initiatives

Requirements

Testing

Implementation

Acceptance

Account Management

Service Delivery COE

Network Systems COE

Other COEs

CIS

Project

IT Factory

**Account Management**
- Q13-Q10 deliverables
- Requirements definition
- Program/project architecture/blueprint
- Requirements tracking for initiatives
- Implementation oversight
- Testing plan and oversight
- Issue identification and resolution
- Risk identification and resolution

**VDSL Program Management**
- Overall program tracking and management
- Overall program risk and issue escalation
- Overall program issue resolution
- Overall program risk mitigation
- Executive stakeholder communication
- Overall program architecture
- Overall program integration & dependency management
- Program metrics and QA

**IT Projects**
- Q10- Q2, Q2-Q0 deliverables
- Project management
- Task plan development
- Requirements tracking
- Status reporting
- Cross-project coordination
- Issue & risk identification & resolution

# Program Management

**Architecture & Strategy**

**VDSL Blueprint**

Business Process Breakdown (Frameworks)

Dependencies

Priorities

End to End

**VDSL Frameworks**

Current State Business Process

End to End Process Analysis

Pain Points

Opportunities for Improvement

Goal State Business Process

Suggested Transition Planning

Quality Points Measures of Success

A

CMM Level 2
***Repeatable***

**Program Office (PMO) Oversight**

**Activities:** Tracking & Scheduling
Financial Management
Issues Management & Risk Management
Resource Management
Quality Management
Stakeholder Management
Third Party Management

**CMM Level 2 KPA's**
**Requirements Management**
**Software Project Management**
**Software Project Tracking & Oversight**
**Software Sub-contractor Management**
**Software Quality Assurance**
**Software Configuration Management**

B

**Activity Highlights**
- Q13
- Dependencies
- Timelines
- Training
- M & P's
- Business Process
- Risks & Issues
- Cross COE considerations
- Program Office Links (Vendor & Inter-Org.)
- Reporting
- Change Control
- Budget
- Deliverables Schedule
- Testing & Deployment Planning

C

CMM Level 3
***Defined***

**Executive Steering Committee Oversight**

**Activities:** VDSL Organization
Roles & Responsibilities
Risks & Issues
Change Control
Inter-Program Office Coordination
Vendor Management Process
Cross COE Management
Development Project Management
Peer Reviews
Training Planning

**CMM Level 3 KPA's**
**Organizational processes focus**
**Organization process definition**
**Training program**
**Integrated software management**
**Software product engineering**
**Intergroup coordination**
**Peer reviews**

**Activity Highlights**
- Business Process Definition
- Vendor Project Plan's)
- Multi-PMO coordination
- Deliverables Status
- Business Deliverables Valuation
- Deliverables Prioritization
- Deployment Planning

CMM Level 4
***Managed***

**Post Business Case Measurement & Reporting**

**Activities: Quality Point Definitions & Expectation Planning**
**Process Simulation Study**

**CMM Level 4 KPA's**
**Quality Process Management**
**Software quality management**

D

**Activity Highlights**
- Timeline to Deliverables
- Deliverables Deployment Results to Goals
- Lessons Learned
- Release II
- Pain Point Resolution
- Improvement Index
- Change Index

A - It starts with ***Strategy & Architecture***

B - Defined ***PMO Processes & Implementation***

C - Next, ***Executive Oversight as well as Program Level Management Structure***

D - Finally, ***Current and Post Program Quality Reviews*** (Did we deliver what we said we would)

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Section I - Status

# VDSL Jeopardy's

- **Fault Management**
  - No contract with vendor
  - Operations roles/responsibilities/processes not defined
- **Testing Phase (Telecordia, NCON)**
  - Need to baseline Release 1 (in progress)
  - Environment setup for testing (run-plan)
  - CIS liaison - need ownership in CIS for VDSL Testing
- **WFA/C business strategy**
- **Activation Strategy**

# Program Needs

## What can IT Leadership do?

- **Assign accountable program directors in each COE and CIS**
  - Implementation of Integrated Standard Program Office Functions and Processes
  - Facilitate inter-group coordination process
- **Systems Engineers (Inventory, Product Qualification, Homes Passed)**
- **Integration Test Support**
  - Element Management System
  - Integration Test Central Point of Coordination
  - Test Architect to define plan to support tests
  - Resources to execute and project manage testing
- **Implementation Managers**
  - Coordinate with client
  - Hardware Run Plan
  - Interface with Testing
- **Space: Co-locate VDSL AM team- preferably in 1475 Lawrence**

# Repair Analysis

## Opportunity for Improvement

A. Optimize data collection and contact time between RSA and customer by 30%-50%

B. Optimize problem isolation/resolution function through automation between 50%-60%

C. Eliminate manual pass off required to do telephony testing

## Resolution Strategy

(1). Deploy RCE to xDSL repair channel to manage contact between customer and RSA

(2). De-couple MLT from LMOS allowing line tests (Telephony FTTN) to be performed directly from WFA/C

(3). Automate the collection of relevant data necessary to screen a trouble ticket and introduce fault management capability

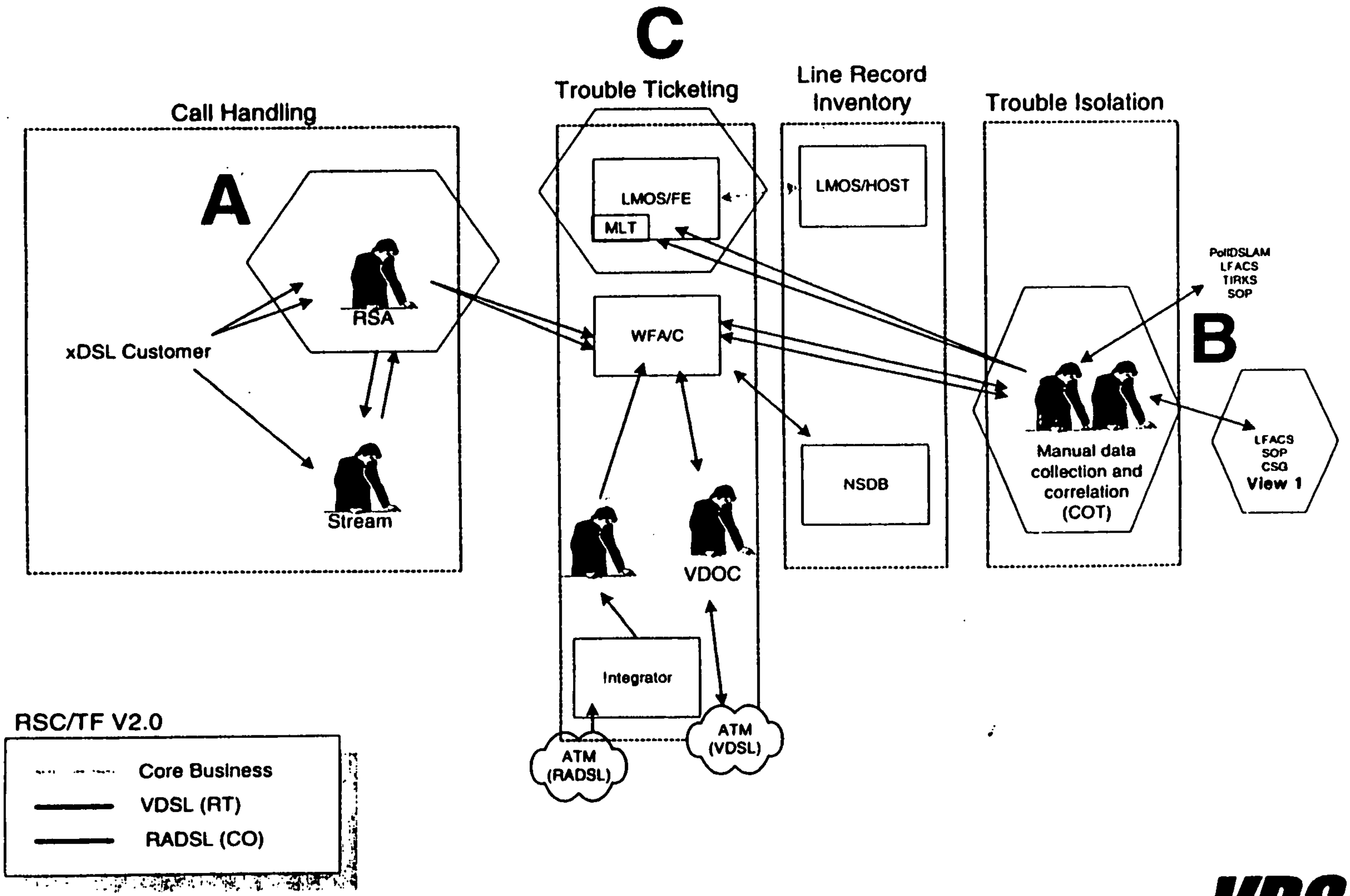
(4). Optimize screening time and reduce reliance on View 1 by developing an end-to-end network transport tool (Poll-USAM)

## Impact and Issues

- Need accurate customer line record (NSDB)
- The current repair model is reactive whereas fault management can drive a proactive repair approach

## Section II - Featured Area - Detail

# Current Look - Repair



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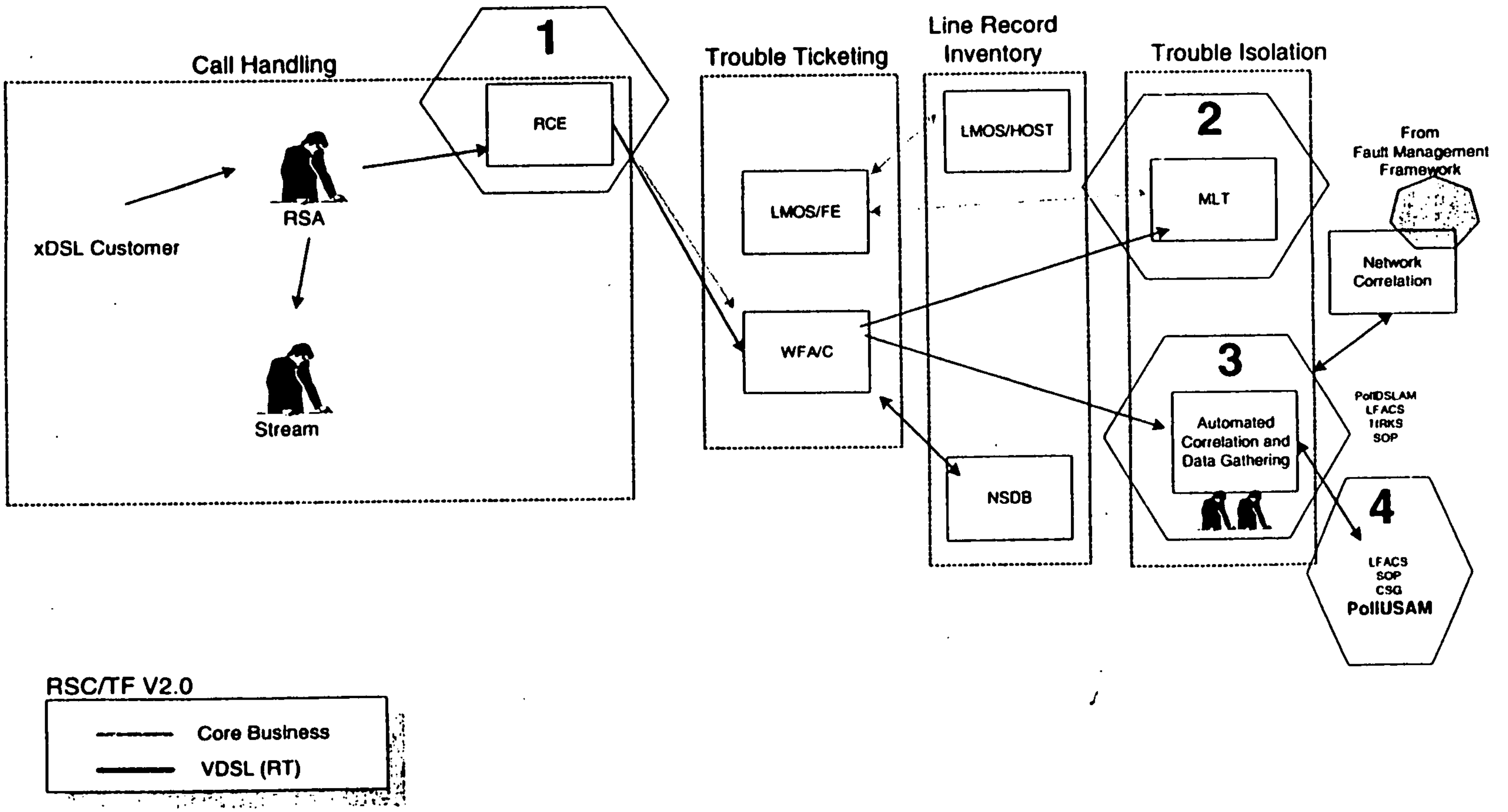
Rich [illegible]
Tim [illegible]

## Section II - Featured Area - Detail

# Interim Look - Repair



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# Trouble Ticketing Analysis

## Opportunity for Improvement

A. Introduce trouble ticket correlation capabilities in or around existing trouble ticketing system

B. Address long term WFA/C viability concerns

C. All interactions with secure partners are manual

D. Introduce more custom self serve capabilities

## Resolution Strategy

(1). A Web/TV trouble ticketing system

(2). A network driven trouble ticketing system (proactive repair model)

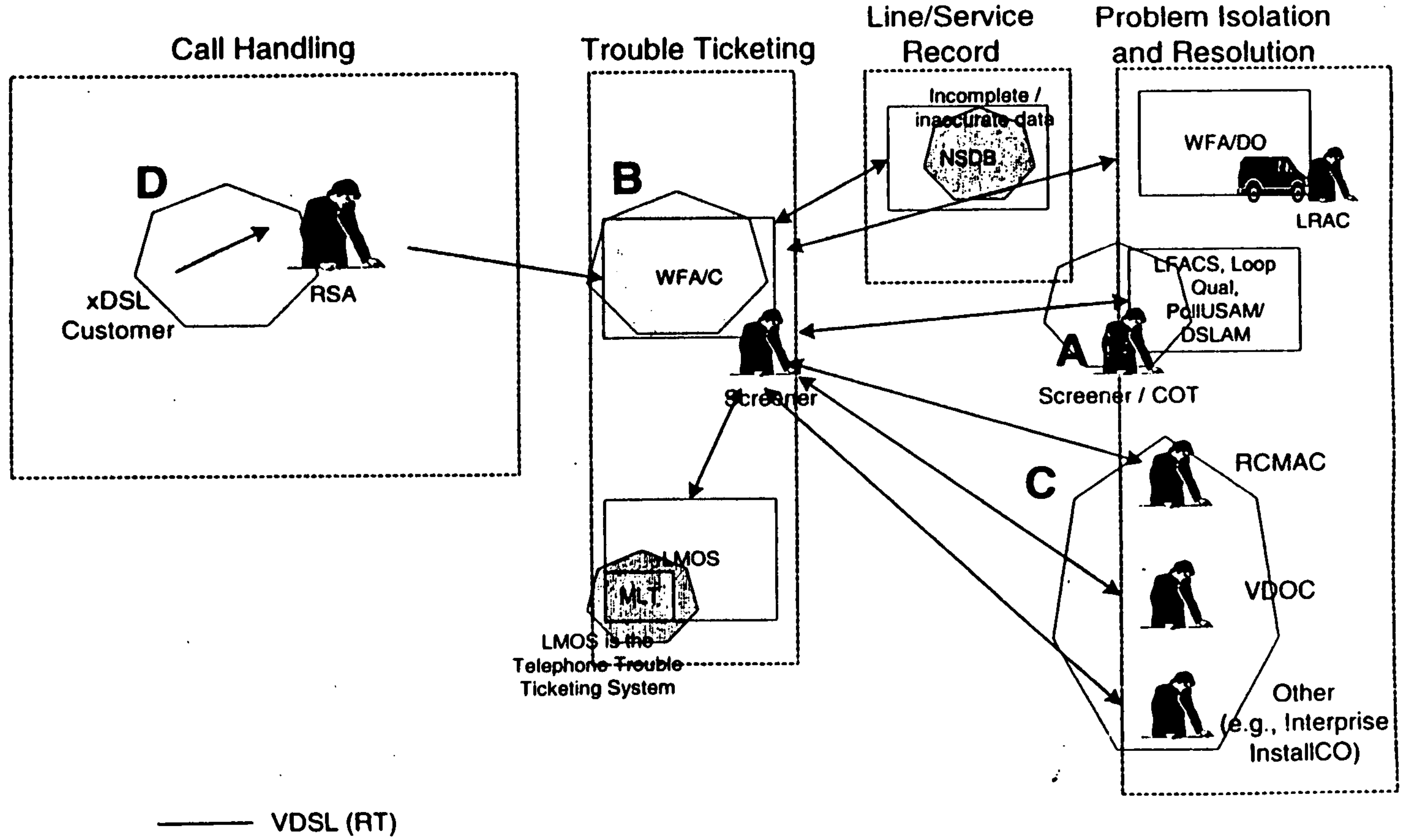
(3). Trouble Ticketing referral system (for other service providers)

## Impact and Issues

- *Corp. question*: How much will it cost ($) to groom WFA/C into the long term strategy vs building an entirely new trouble ticketing system for xDSL?
- WFA/C can overcome projected volume limitations in the short term (2Q00-2Q01) via hardware upgrades. (*see WFA/C Strategy Grid & Utilization Projection in Appendix B & C respectively*).

## Section II - Featured Area - Detail

# Current Look - Trouble Ticketing



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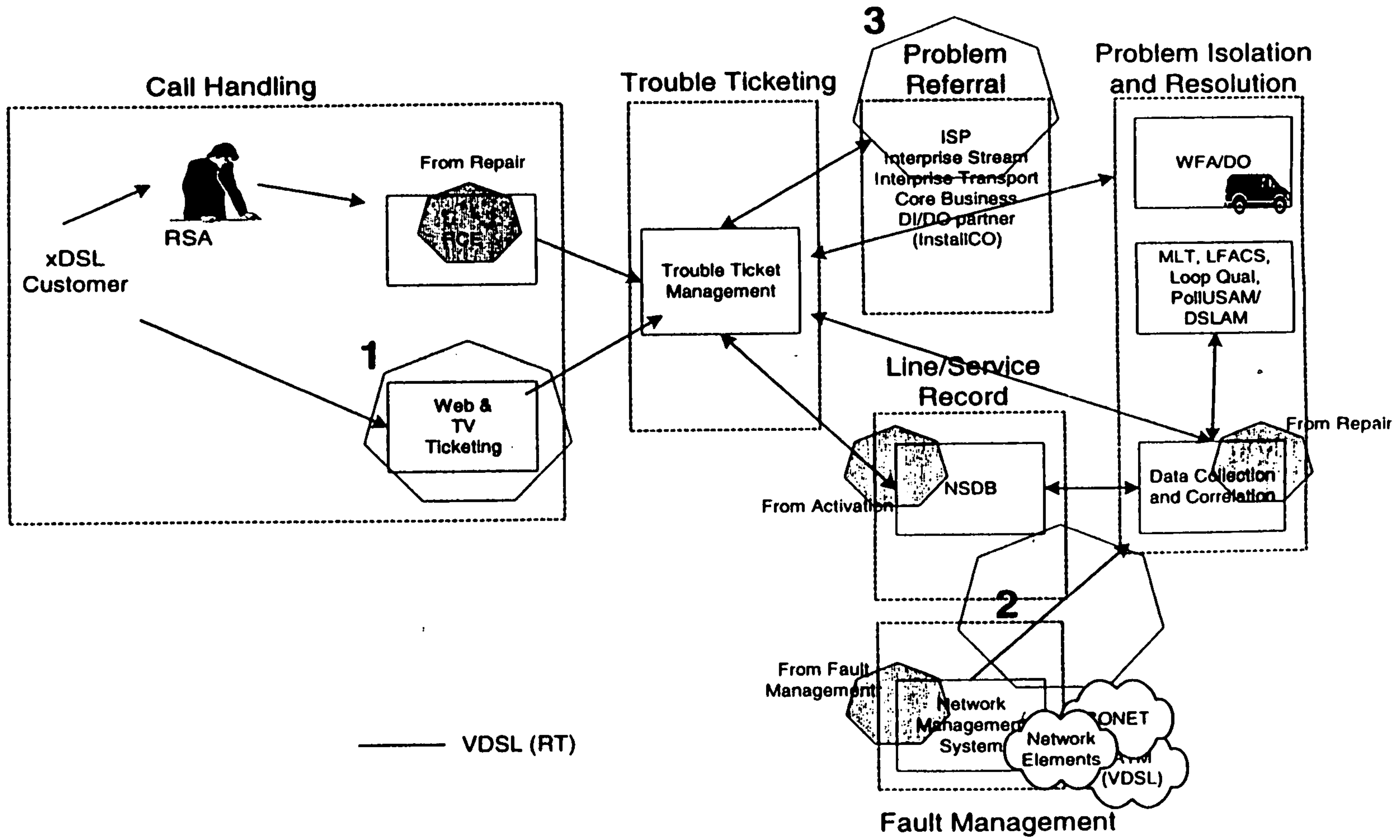
# 1H02 Look - Trouble Ticketing



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Section II - Featured Area - Detail

# Order Entry Analysis

## Case 1: VDSL Service Center - Opportunity for Improvement

A. Reduce time to take a service order

B. Enhance capability to meet customer commitments

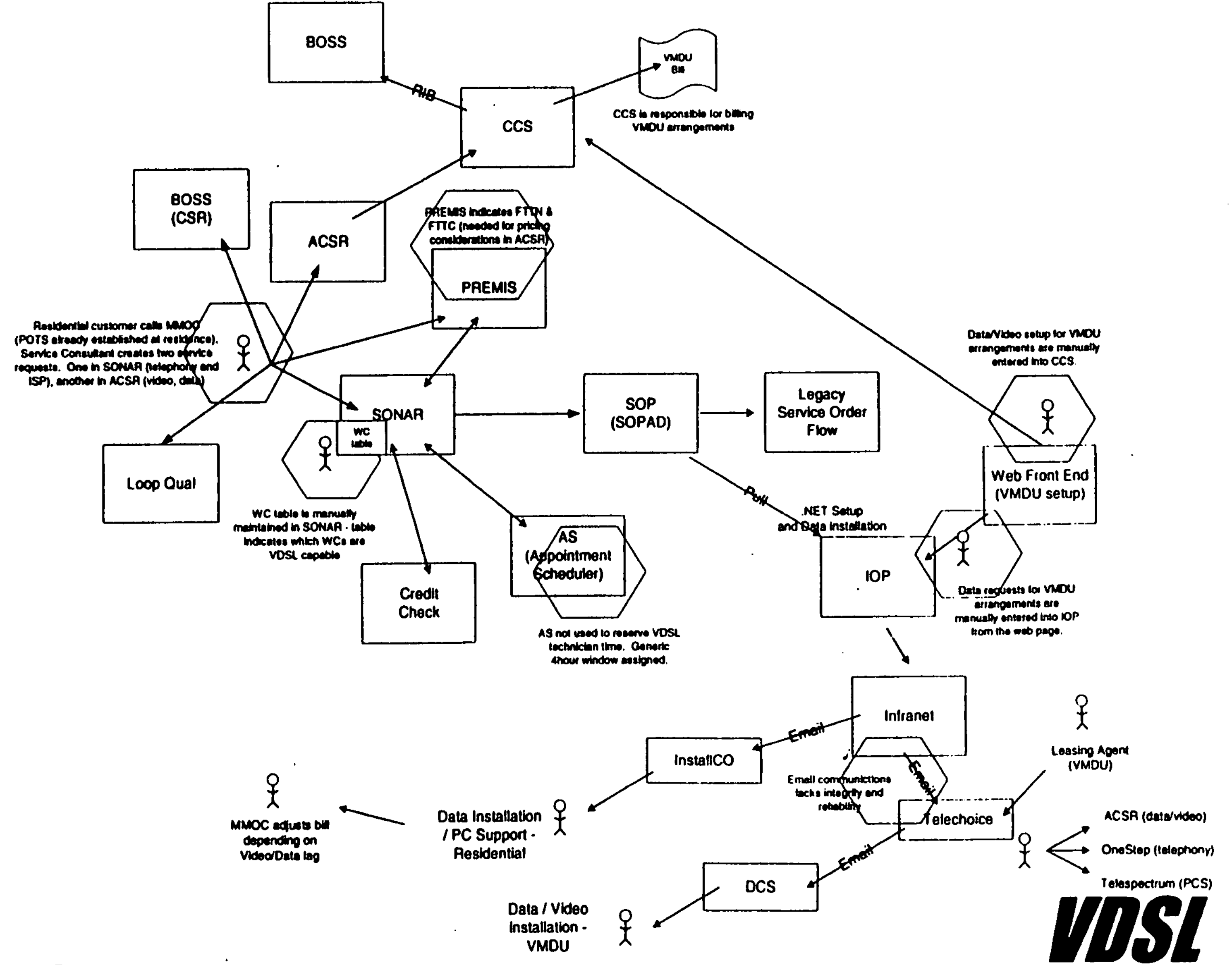
C. Simplify the order entry process

## Case 2 Mass Market - Opportunity for Improvement

A. Add capability to take VDSL order in Mass Market Channel

## Section II - Featured Area - (Case 1: VDSL Service Center)

# Current Look Order Entry



CCS is responsible for billing VMDU arrangements

Residential customer calls MMOC (POTS already established at residence). Service Consultant creates two service requests. One in SONAR (telephony and ISP), another in ACSR (video, data)

PREMIS indicates FTTN & FTTC (needed for pricing considerations in ACSR)

Data/Video setup for VMDU arrangements are manually entered into CCS.

WC table is manually maintained in SONAR - table indicates which WCs are VDSL capable

AS not used to reserve VDSL technician time. Generic 4hour window assigned.

Data requests for VMDU arrangements are manually entered into IOP from the web page.

Email communictions lacks integrity and reliability

MMOC adjusts bill depending on Video/Data lag

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# Order Entry Analysis

## Reduce Time to take Service Order:

(2) Loop Qualifier will now be responsible for indicating if a customer is serviced by a franchise and in either FTTC or FTTN configuration. This data will no longer be maintained by PREMIS. Loop Qualifier will also update the WCTABLE in SONAR.

(3) Consulting+ will be added to mitigate the need for the Service Consultant to access multiple systems necessary to create two service requests for a VDSL service.

(4) An interface from Consulting+ to ACSR is uncommitted.

## Enhance capability to meet customer commitments:

(1) Service order requires (default) Video Package and actual Data Package codes as these codes are required for NCON/Delivery to complete initial activation of Video and/or Data service.

(7) Appointment Scheduler is being enhanced to include VDSL

(8) The existing Email message from Infranet to Telechoice will be replace by and EDI contract. (!nterprise SOW)

(9) IOP will be modified to receive .NET requests for VMDU customers automatically from CCS. (CSG SOW)

(10) The current Web Front End for VMDU use will be modified and enhanced to allow direct access from Leasing Agents and Leasing agents to issue orders to ACSR, OneStep, and Telespectrum. (CSG SOW)

## Simplify the Order Entry Process:

(1) Service Order requires Video and Data Package codes as these codes are required for NCON/Delivery to complete initial activation of Video and/or Data service.

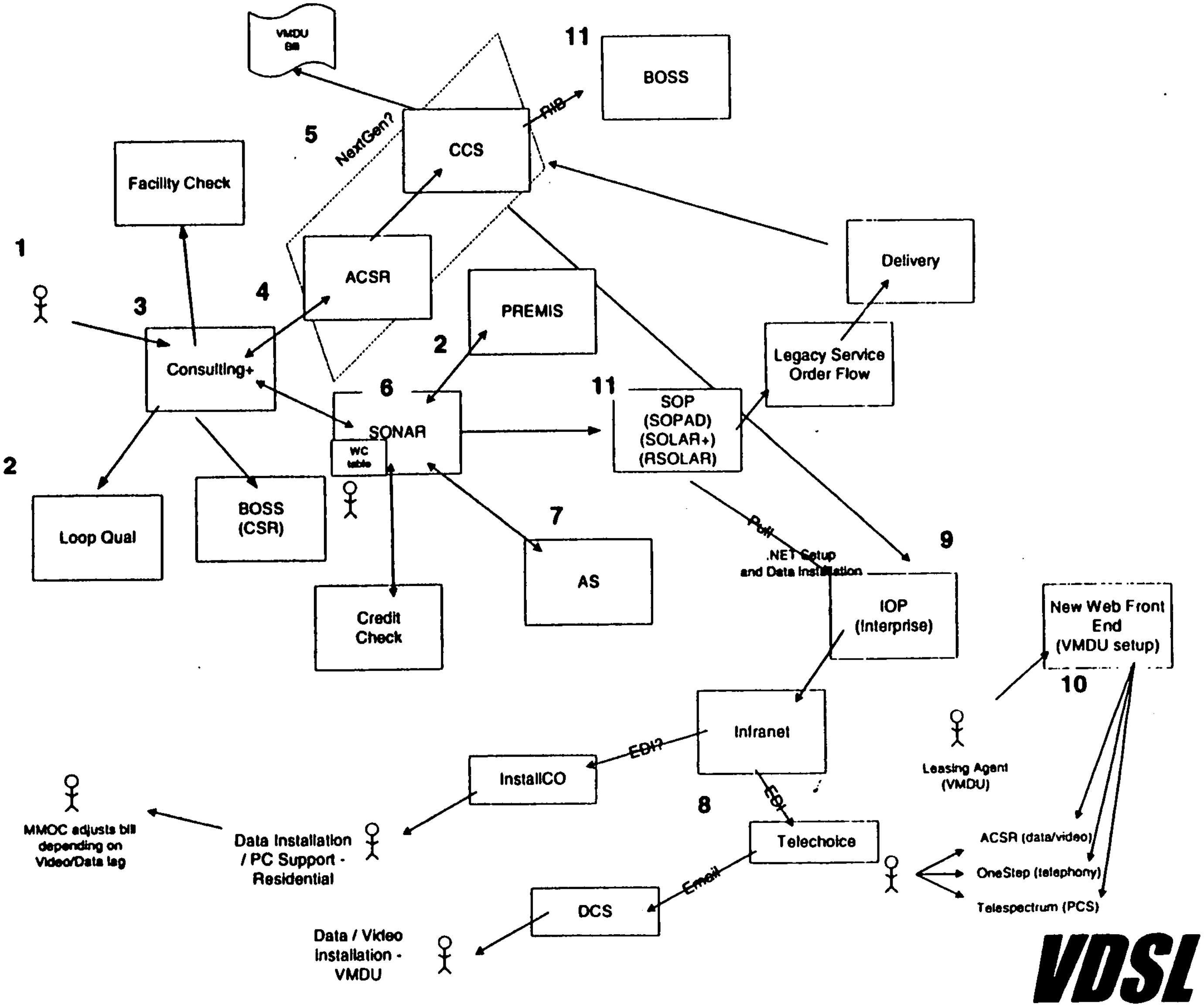
(5) A potential move from CSG's ACSR/CCS application to CSG's NextGen application will NOT be persued in 2000.

(6) A new Service USOC is being requested in an effort to clearly distinguish a VDSL customer from a POTS customer (i.e., a move from IFR/IFB to a unique VDSL USOC). A feasibility analysis must be performed to determine if this is the right solution based on understood problem areas.

(11) All SOPs must be VDSL capable. RIB must be available to all BOSS regions from CCS.

## Section II - Featured Area *Case #1 VDSL Service Center*

# Interim Look Order Entry



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# Order Entry Analysis

## Ability to take VDSL Order in Mass Market Channel

12. Facility Check must be enhanced to receive Loop Qualifier Data by TN and Address.

13. Eleven New Video/Data Package USOCs must be added to the service order process.

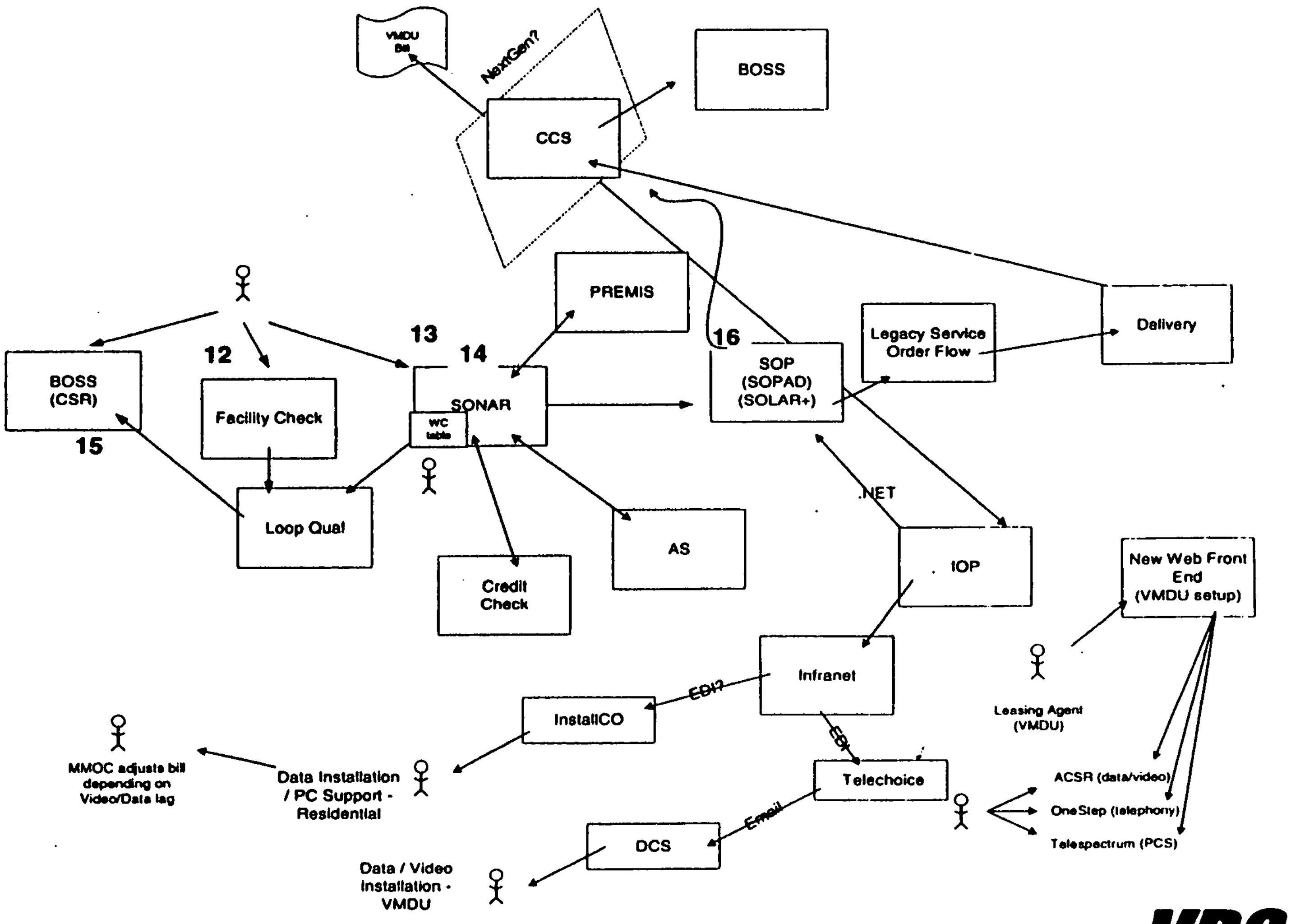
14. Service order requires Video and Data Package codes for each USOC in #13 - Use Default for Video.

15. Upon request of a CSR from BOSS, Loop Qualifier data for that customer must be displayed.

16. A Mechanism is needed to feed ACSR/CCS of a service requests that was taken in the mass market channel.

## Section II - Featured Area *Case #2 Mass Market*

# Interim Look Order Entry



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# Inventory Analysis

## Opportunity for Improvement

A. Orders are taken on the assumption of inventory resulting in held orders and missed commitments when there is no available inventory

B. Inventory data used for market forecasting is incomplete

C. Updates and synchronization of RT cards/ports between systems are manual

D. Inventory management of BDT/USAM/BNU/Fiber components is manual

E. Inventory Management of VCI/VPI pools is a manual function

F. CPE fulfillment strategy - to be resolved

## Resolution Strategy - Interim

(1). Loop Qualification (Product Qualification framework) will present the service consultant with a view of available inventory

(2). Planned inventory will be incorporated into the marketing forecast inventory data

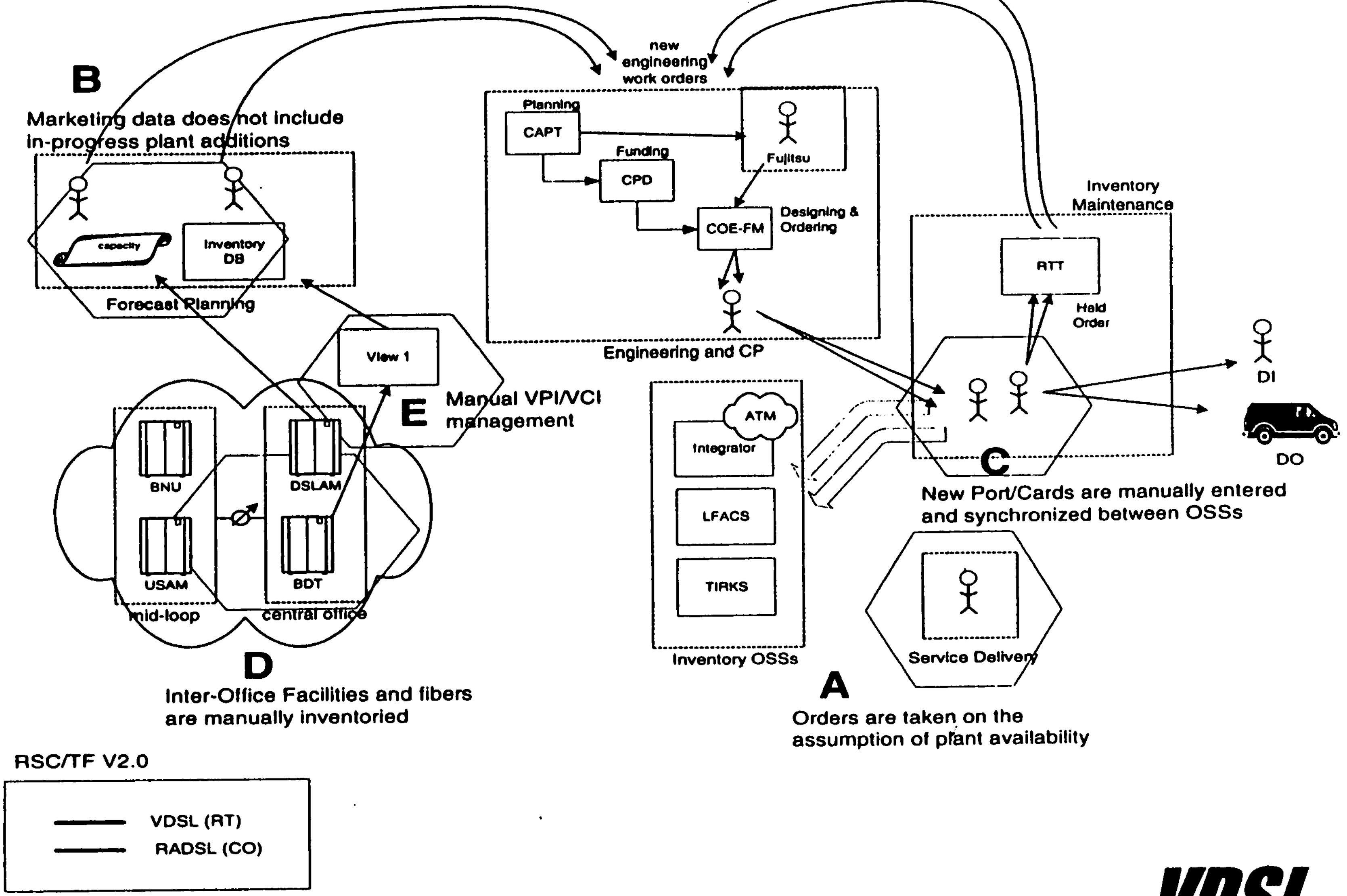
(3). NCON/Delivery will be used to synchronize the network element view of used and available for use inventory with LFACS.

(4). Automate the inventory management of BDT/USAM/BNU and fiber system - TBD

(5). Automate inventory management of VCI/VPI pools with !ntegrator

## Section II - Featured Area - Detail

# Current Look Inventory



**B**
Marketing data does not include
in-progress plant additions

**E** Manual VPI/VCI
management

**C**
New Port/Cards are manually entered
and synchronized between OSSs

**D**
Inter-Office Facilities and fibers
are manually inventoried

**A**
Orders are taken on the
assumption of plant availability

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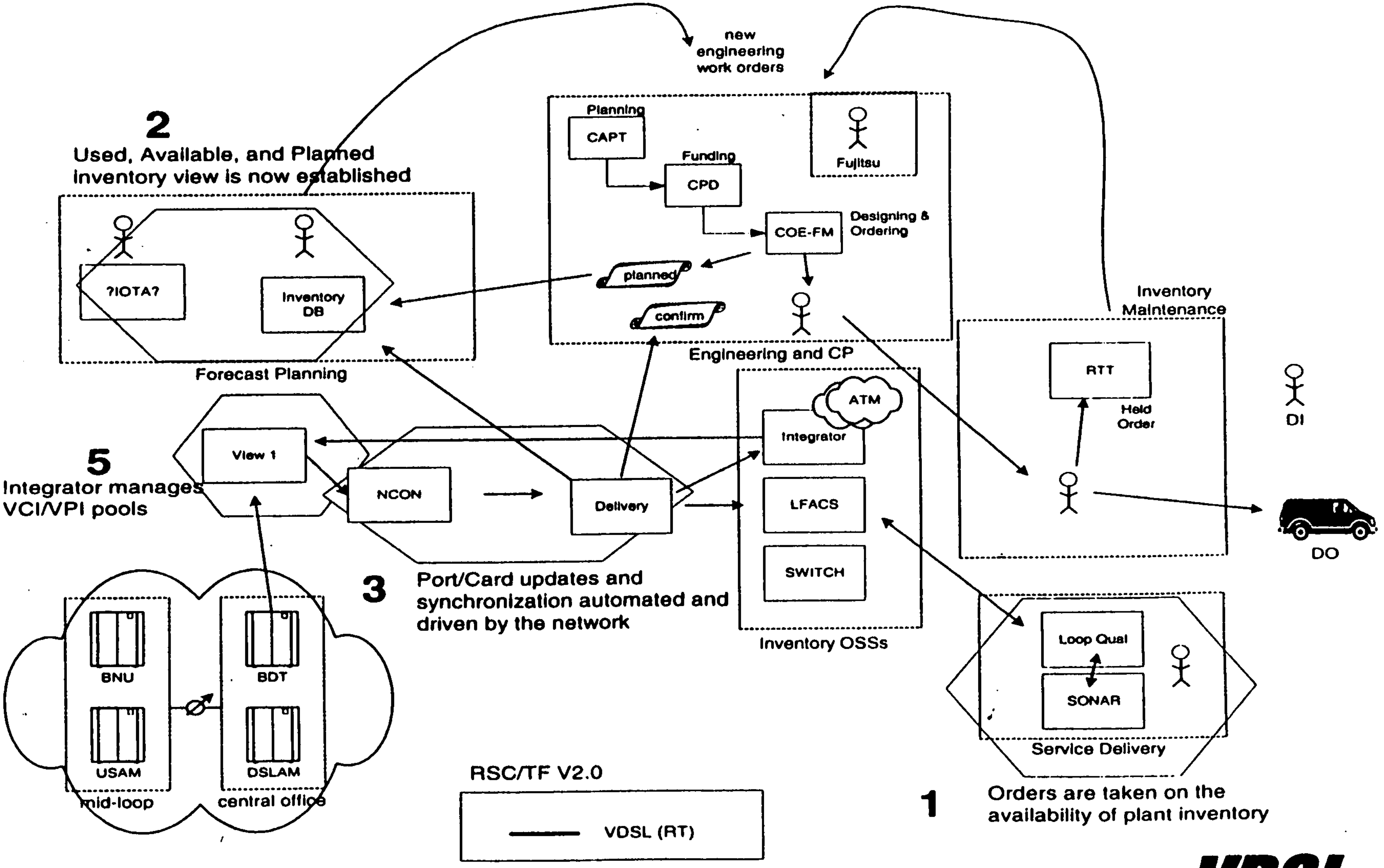
# Interim Look - Inventory Management



2 Used, Available, and Planned inventory view is now established

5 Integrator manages VCI/VPI pools

3 Port/Card updates and synchronization automated and driven by the network

1 Orders are taken on the availability of plant inventory

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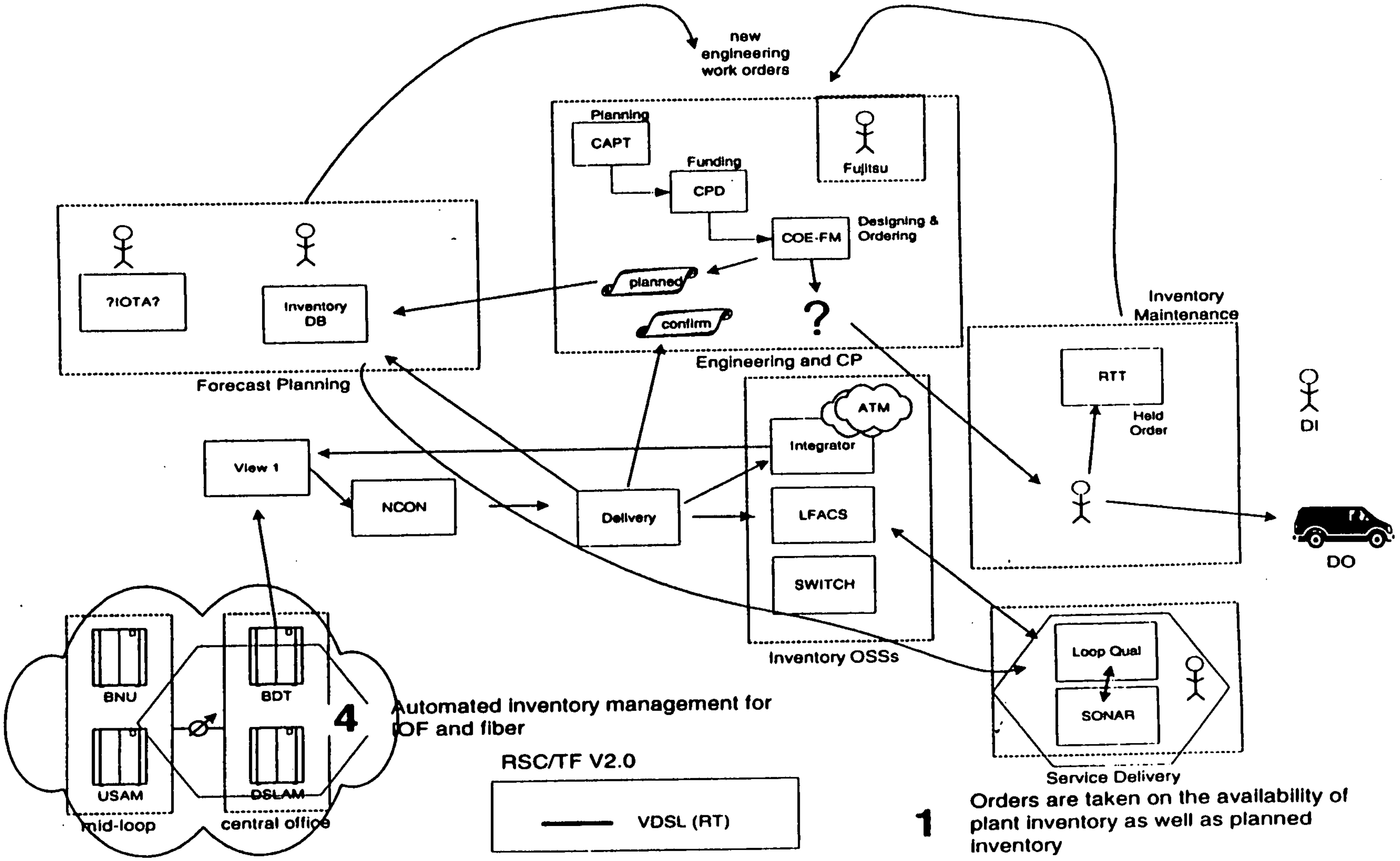
# 1H02 Look - Inventory Management



Automated inventory management for IOF and fiber

Orders are taken on the availability of plant inventory as well as planned inventory

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# Current Look - Activation/Provisioning

## Opportunity for Improvement

- Reduce VDSL installation costs due to the manual efforts (estimated at about $40 per order) required to place the port, card, onu, and MACID into ACSR/CCS and prepare the activation message from CCS to View 2.

- Lack of a single system view is affecting customer service (multiple system, different truths, pass-off's) - *unable to assess financial impact,* and increasing the time and complexity of the repair screening function, estimated at about $4.50 per ticket.

- Address inventory inconsistencies between LFACS, CCS, and View 2 resulting from a failed add CPE message. An estimated $27 saving for every order requiring and inventory change.

## Resolution Strategy - Interim

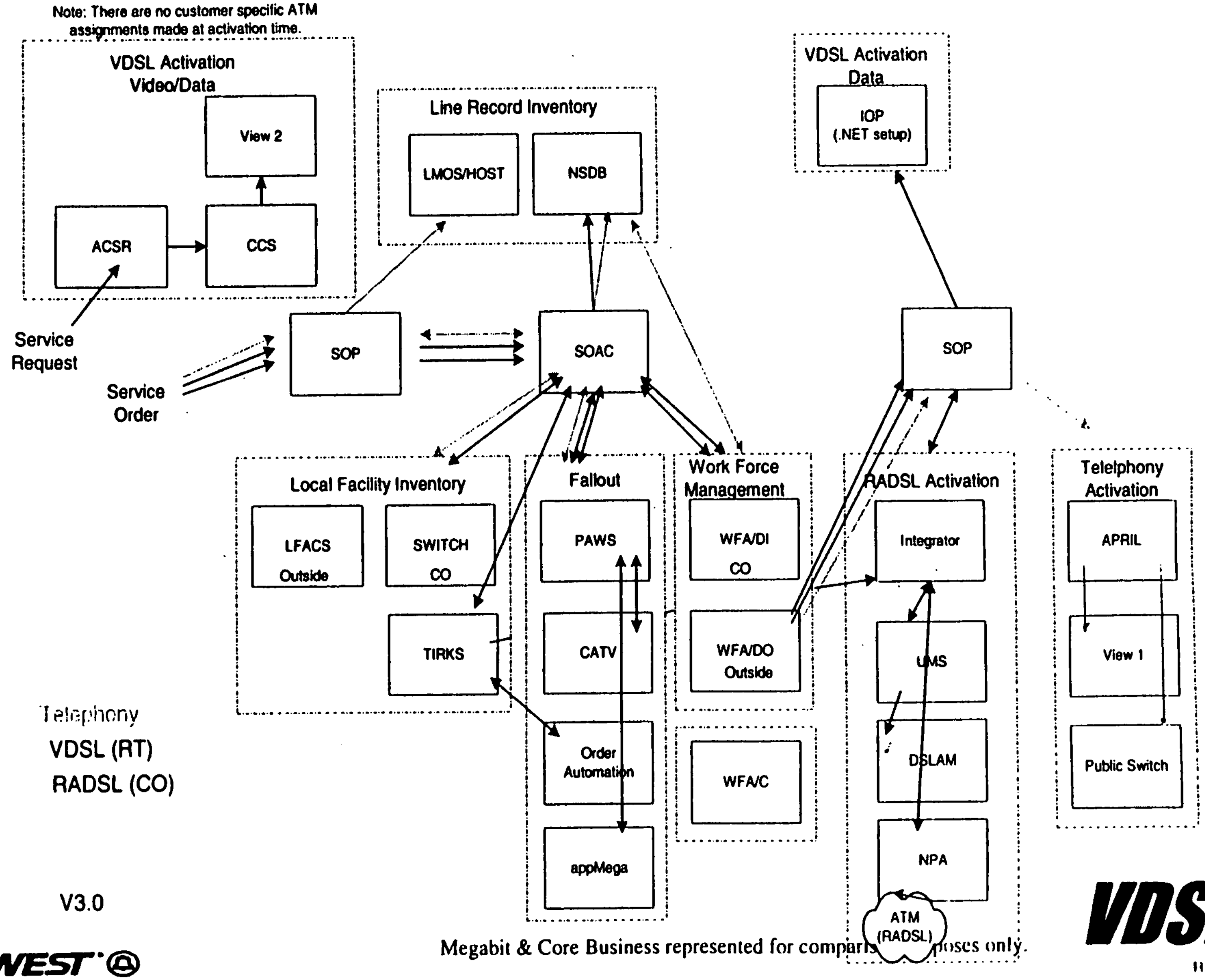
- Deploy NCON/Delivery

## Impact and Issues

- Timeframes and schedules necessary to develop interfaces to CCS/NextGen and NCL must be negotiated

## Section II - Featured Area - Detail

# Current Look - Activation/Provisioning



Telephony
VDSL (RT)
RADSL (CO)

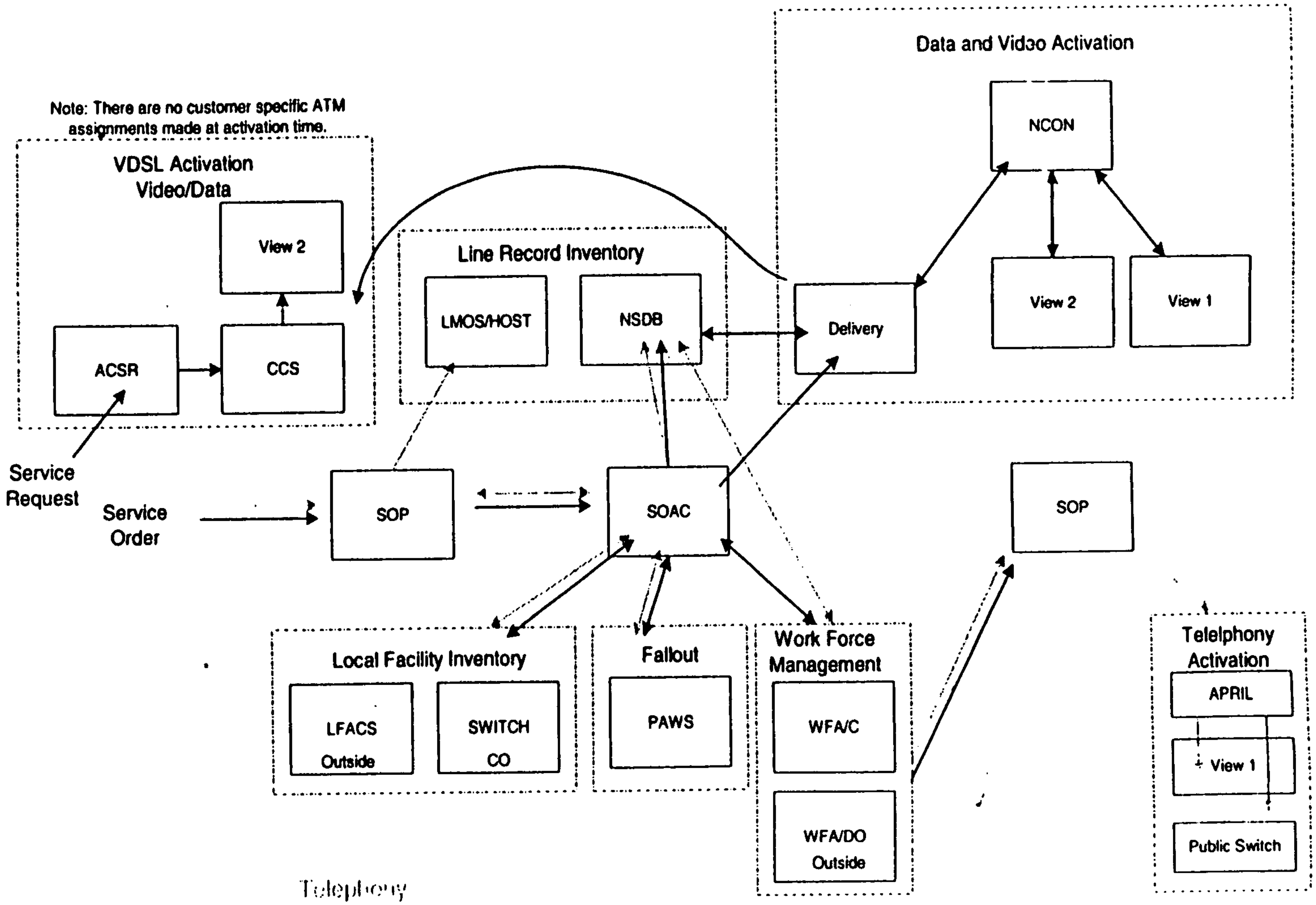
V3.0

Megabit & Core Business represented for comparison purposes only.

**VDSL**

Roxanna Storaasli
Rich Cerami
Tim Figueroa

# Interim Look - Activation/Provisioning



V3.0

Telephony

VDSL (RT)

Megabit & Core Business represented for comparison purposes only.

**VDSL**

## Detailed Walk Through - Activation/Provisioning

### Benefits of Approach

- Estimated $40 savings per order as a result of self discovery of the MACID
- Estimated $27 savings per order for each repair requiring an inventory re-assignment
- Estimated $4.50 savings per repair ticketing taken.
- Two way interface to View 2 with activation acknowledgements and error messages being sent directly to the LPC through PAWS
- Automated close outs of CCS orders: Installation, Repair (physical inventory), and delete
- Automated update/synchronization of TN changes
- Open, standard interface/protocol to View 2
- Automated synchronization of physical inventory
- Achievable in 2-3Q00

Megabit & Core Business represented for comparison purposes only.

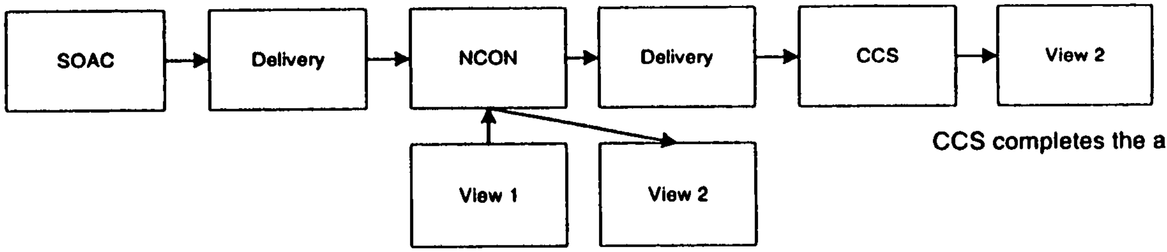
# Detailed Walk Through - Activation/Provisioning

## New Service:

CCS Message 1

The Service Order is sent from SOAC to Delivery after loop makeup is complete.

After successful activation, CCS is sent:
- MAC-ID
- New TN
- Broadband CKID



CCS completes the activation.

Upon receipt of the MAC-ID an activation request is sent to View 2

CCS Message 2

CCS is sent the work order close:
- TN
- Close out code

The work request is automatically closed in CCS.

The Service Order is "completed" one the Dispatch Out ticket is closed

SOAC notifies Delivery of the close of the work order.

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**U S WEST Proprietary**

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VDSL

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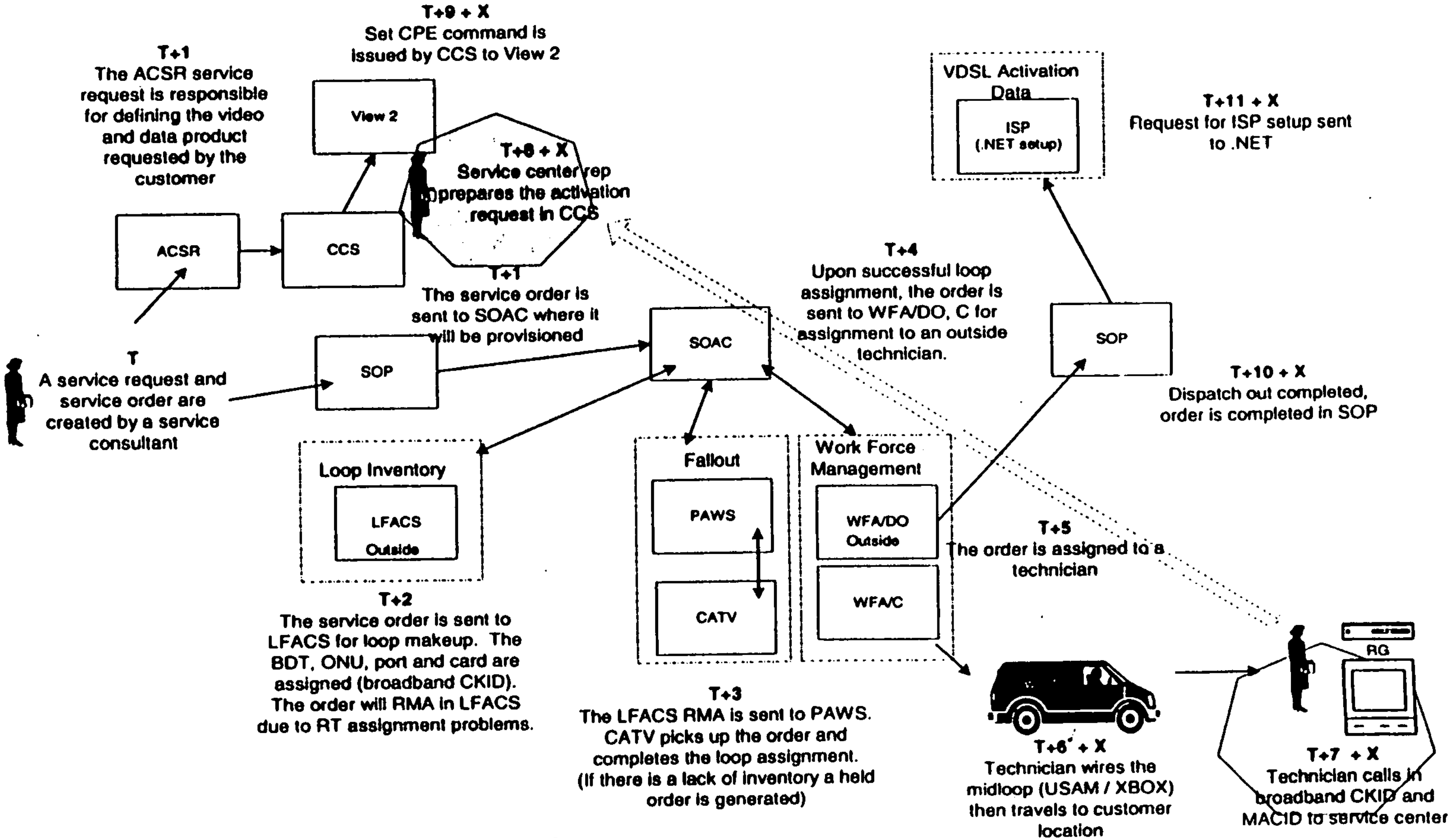
Rich Cerami
Tim Figueroa

# Detailed Walk Through - Activation/Provisioning

**Current State**
**New VDSL Service**



**T**
A service request and service order are created by a service consultant

**T+1**
The ACSR service request is responsible for defining the video and data product requested by the customer

**T+1**
The service order is sent to SOAC where it will be provisioned

**T+2**
The service order is sent to LFACS for loop makeup. The BDT, ONU, port and card are assigned (broadband CKID). The order will RMA in LFACS due to RT assignment problems.

**T+3**
The LFACS RMA is sent to PAWS. CATV picks up the order and completes the loop assignment. (If there is a lack of inventory a held order is generated)

**T+4**
Upon successful loop assignment, the order is sent to WFA/DO, C for assignment to an outside technician.

**T+5**
The order is assigned to a technician

**T+6 + X**
Technician wires the midloop (USAM / XBOX) then travels to customer location

**T+7 + X**
Technician calls in broadband CKID and MACID to service center

**T+8 + X**
Service center rep prepares the activation request in CCS

**T+9 + X**
Set CPE command is issued by CCS to View 2

**T+10 + X**
Dispatch out completed, order is completed in SOP

**T+11 + X**
Request for ISP setup sent to .NET

Manual function

⬡ Pain Point

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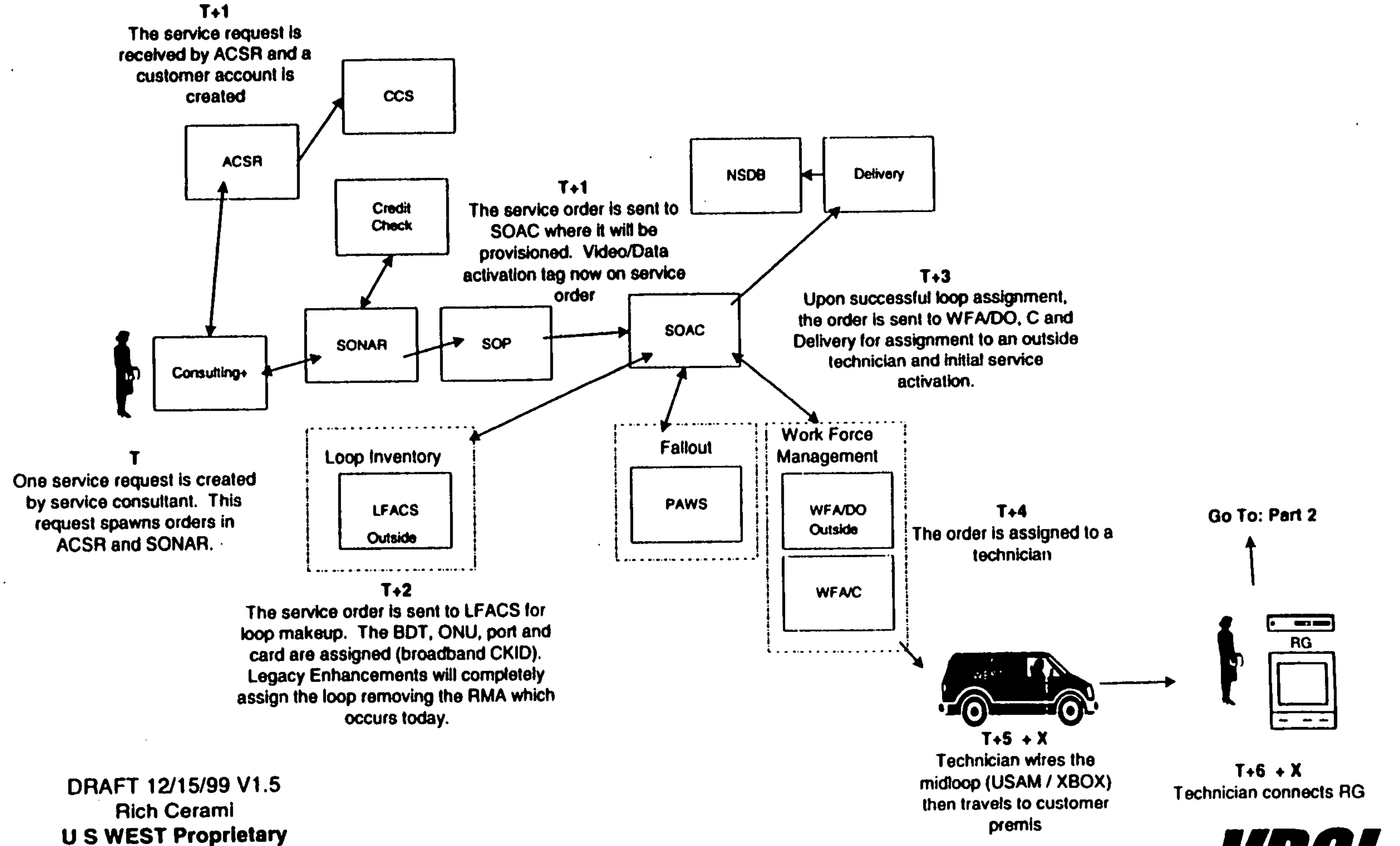
Rich Cerami
Tim Figueroa

## Section II - Featured Area - Detail

# Detailed Walk Through - Activation/Provisioning

**Proposed State**
**New VDSL Service**
**Part 1**



**T+1**
The service request is received by ACSR and a customer account is created

**T**
One service request is created by service consultant. This request spawns orders in ACSR and SONAR.

**T+1**
The service order is sent to SOAC where it will be provisioned. Video/Data activation tag now on service order

**T+2**
The service order is sent to LFACS for loop makeup. The BDT, ONU, port and card are assigned (broadband CKID). Legacy Enhancements will completely assign the loop removing the RMA which occurs today.

**T+3**
Upon successful loop assignment, the order is sent to WFA/DO, C and Delivery for assignment to an outside technician and initial service activation.

**T+4**
The order is assigned to a technician

**T+5 + X**
Technician wires the midloop (USAM / XBOX) then travels to customer premis

**T+6 + X**
Technician connects RG

**Go To: Part 2**

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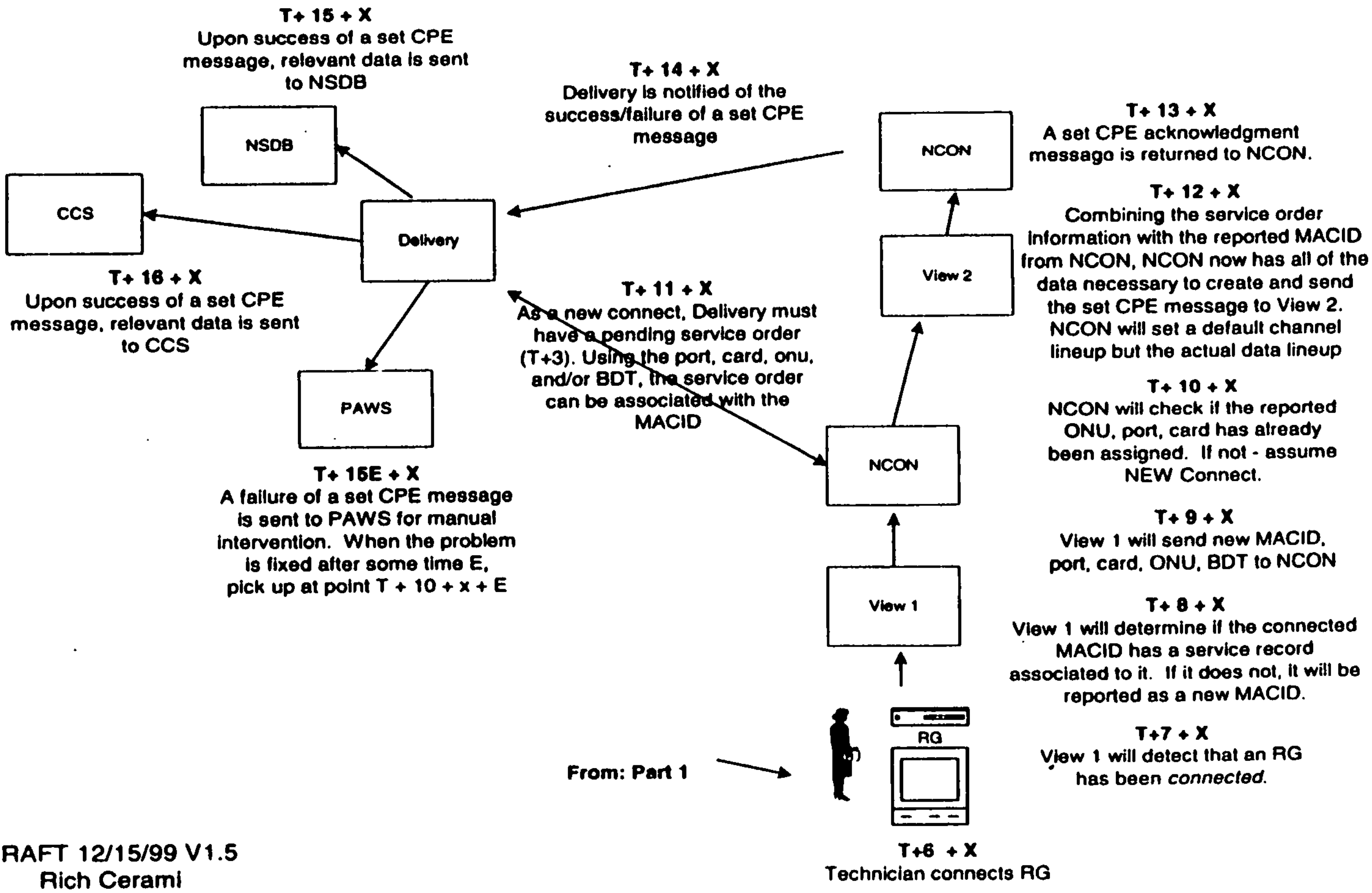
VDSL

Roxanna [illegible]
Rich Cerami
Tim [illegible]

## Section II - Featured Area - Detail

# Detailed Walk Through - Activation/Provisioning

**Proposed State**
**New VDSL Service**
**Part 2**



**T+ 15 + X**
Upon success of a set CPE message, relevant data is sent to NSDB

**T+ 16 + X**
Upon success of a set CPE message, relevant data is sent to CCS

**T+ 15E + X**
A failure of a set CPE message is sent to PAWS for manual intervention. When the problem is fixed after some time E, pick up at point T + 10 + x + E

**T+ 14 + X**
Delivery is notified of the success/failure of a set CPE message

**T+ 11 + X**
As a new connect, Delivery must have a pending service order (T+3). Using the port, card, onu, and/or BDT, the service order can be associated with the MACID

**T+ 13 + X**
A set CPE acknowledgment message is returned to NCON.

**T+ 12 + X**
Combining the service order information with the reported MACID from NCON, NCON now has all of the data necessary to create and send the set CPE message to View 2. NCON will set a default channel lineup but the actual data lineup

**T+ 10 + X**
NCON will check if the reported ONU, port, card has already been assigned. If not - assume NEW Connect.

**T+ 9 + X**
View 1 will send new MACID, port, card, ONU, BDT to NCON

**T+ 8 + X**
View 1 will determine if the connected MACID has a service record associated to it. If it does not, it will be reported as a new MACID.

**T+7 + X**
View 1 will detect that an RG has been *connected*.

**T+6 + X**
Technician connects RG

Not pictured: VCI/VPI or TPPool name identification.

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**VDSL**

Roxanna [illegible]
Rich Cerami
Tim [illegible]

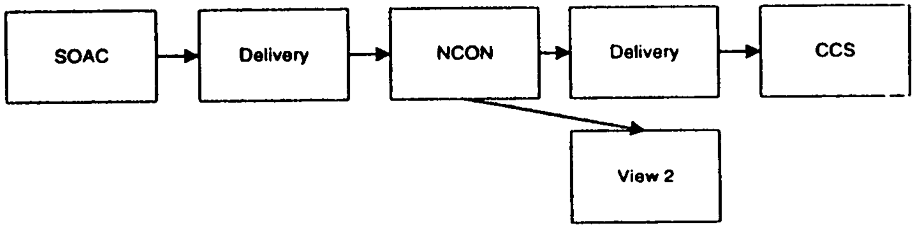
*life's better here*

# Detailed Walk Through - Activation/Provisioning

## VDSL Physical Inventory Repair:

CCS Message 1

An MCT is sent to Delivery indicating a physical inventory change/reassignment which affect physical path to Gateway



NCON Issues a change CPE.

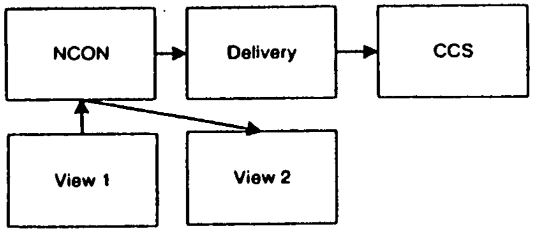
After successful change, CCS is sent:
- TN
- MACID
- Broadband CKID
- Close out code

The work order will be automatically closed in CCS.

## VDSL MAC-ID Replacement:

CCS Message 1

An unsolicited message is received from View 1 indicating a different MAC-ID on an already assigned drop (e.g., bbckid). The MAC-ID is not assigned to another active account.



A change CPE command is issued in View 2

After successful change, CCS is sent:
- TN
- Old MAC-ID
- New MAC-ID
- Close out code

The work order will be automatically closed in CCS.

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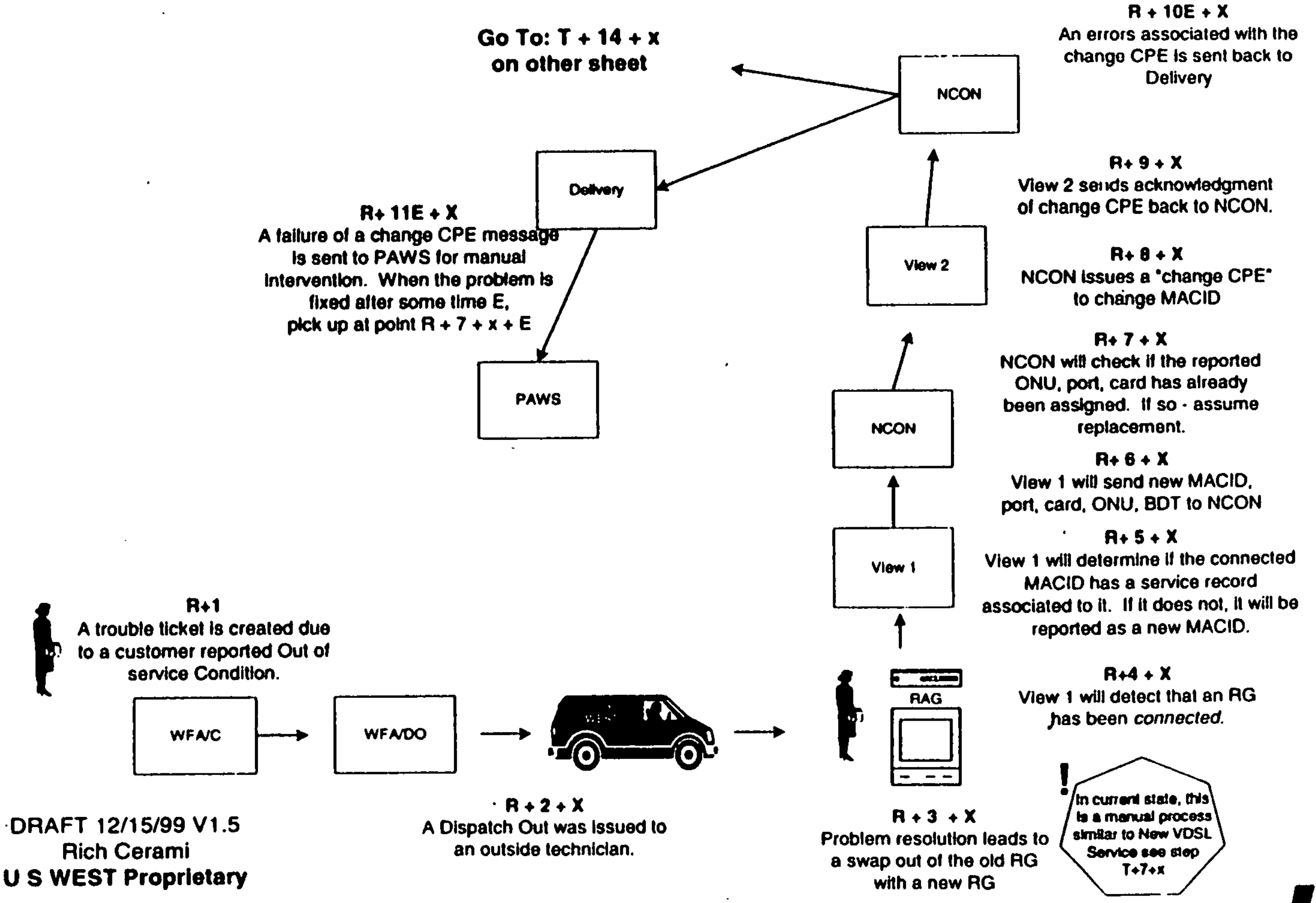
VDSL

## Section II - Featured Area - Detail

# Detailed Walk Through - Activation/Provisioning

**Proposed State**
**Repair: Replace RG/MACID**



**R+1**
A trouble ticket is created due to a customer reported Out of service Condition.

**R + 2 + X**
A Dispatch Out was issued to an outside technician.

**R + 3 + X**
Problem resolution leads to a swap out of the old RG with a new RG

In current state, this is a manual process similar to New VDSL Service see step T+7+x

**R+4 + X**
View 1 will detect that an RG has been *connected.*

**R+ 5 + X**
View 1 will determine if the connected MACID has a service record associated to it. If it does not, it will be reported as a new MACID.

**R+ 6 + X**
View 1 will send new MACID, port, card, ONU, BDT to NCON

**R+ 7 + X**
NCON will check if the reported ONU, port, card has already been assigned. If so - assume replacement.

**R+ 8 + X**
NCON issues a "change CPE" to change MACID

**R+ 9 + X**
View 2 sends acknowledgment of change CPE back to NCON.

**R + 10E + X**
An errors associated with the change CPE is sent back to Delivery

**R+ 11E + X**
A failure of a change CPE message is sent to PAWS for manual intervention. When the problem is fixed after some time E, pick up at point R + 7 + x + E

**Go To: T + 14 + x**
**on other sheet**

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Rich Cerami
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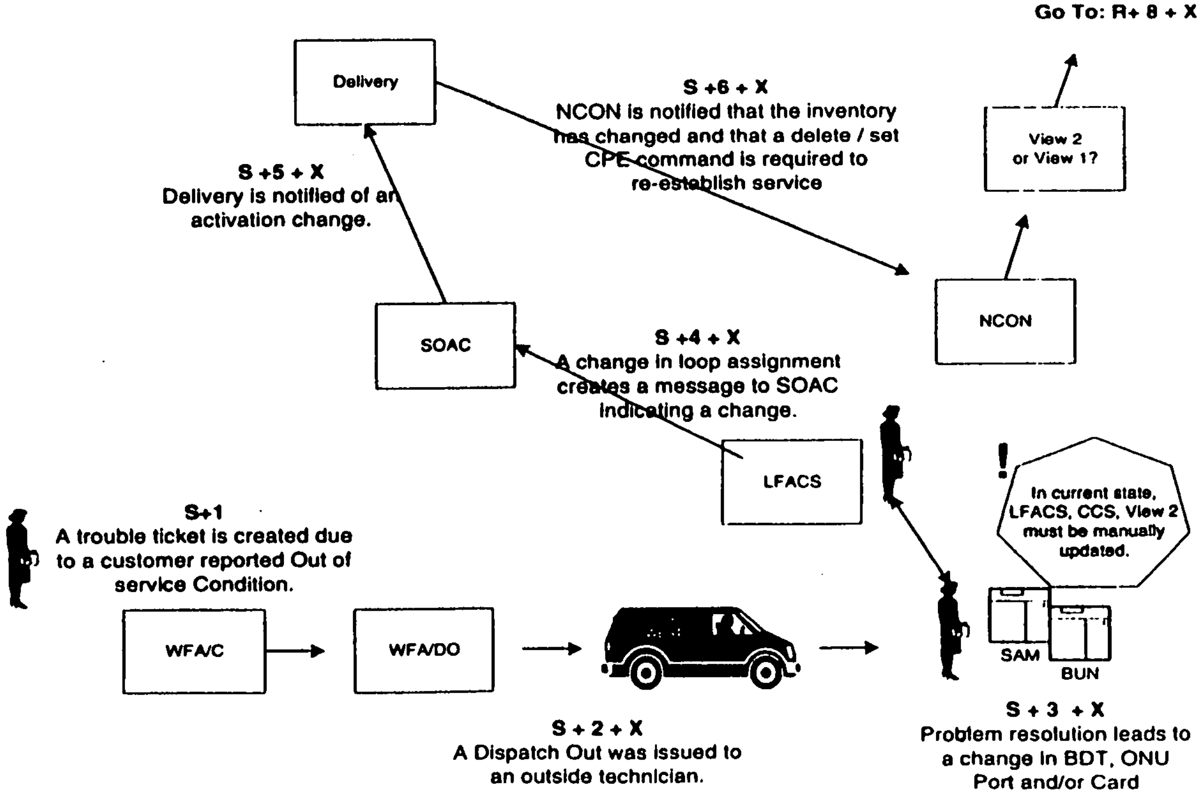
## Section II - Featured Area - Detail

# Detailed Walk Through - Activation/Provisioning

**Proposed State**
**Repair: ONU, port,card, BDT**



Go To: R+ 8 + X

**S +6 + X**
NCON is notified that the inventory has changed and that a delete / set CPE command is required to re-establish service

**S +5 + X**
Delivery is notified of an activation change.

**S +4 + X**
A change in loop assignment creates a message to SOAC indicating a change.

**S+1**
A trouble ticket is created due to a customer reported Out of service Condition.

**S + 2 + X**
A Dispatch Out was issued to an outside technician.

**S + 3 + X**
Problem resolution leads to a change in BDT, ONU Port and/or Card

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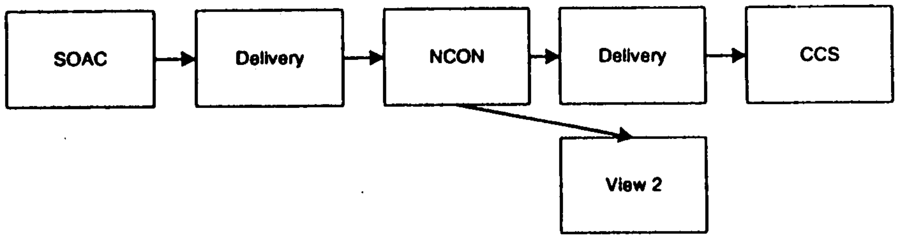
Rich Cerami
Tim [illegible]

# Detailed Walk Through - Activation/Provisioning

## VDSL Service Disconnect:

CCS Message 1

The Service Order is sent from SOAC to Delivery after loop has been torn down.



After successful deactivation, CCS is sent:
- TN

This data will not be used to close the CCS work order, only to status the work order. The CCS work order will be closed manually once the CPE has been received.

NCON disconnects service in the Network element

## TN Change Number:

CCS Message 1

The Service Order is sent from SOAC to Delivery indicating a TN change.

After successful change, CCS is sent:
- New TN
- Old TN

This data will used for CCS to update its records.

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# Product Ordering Assurance Analysis

## Opportunity for Improvement

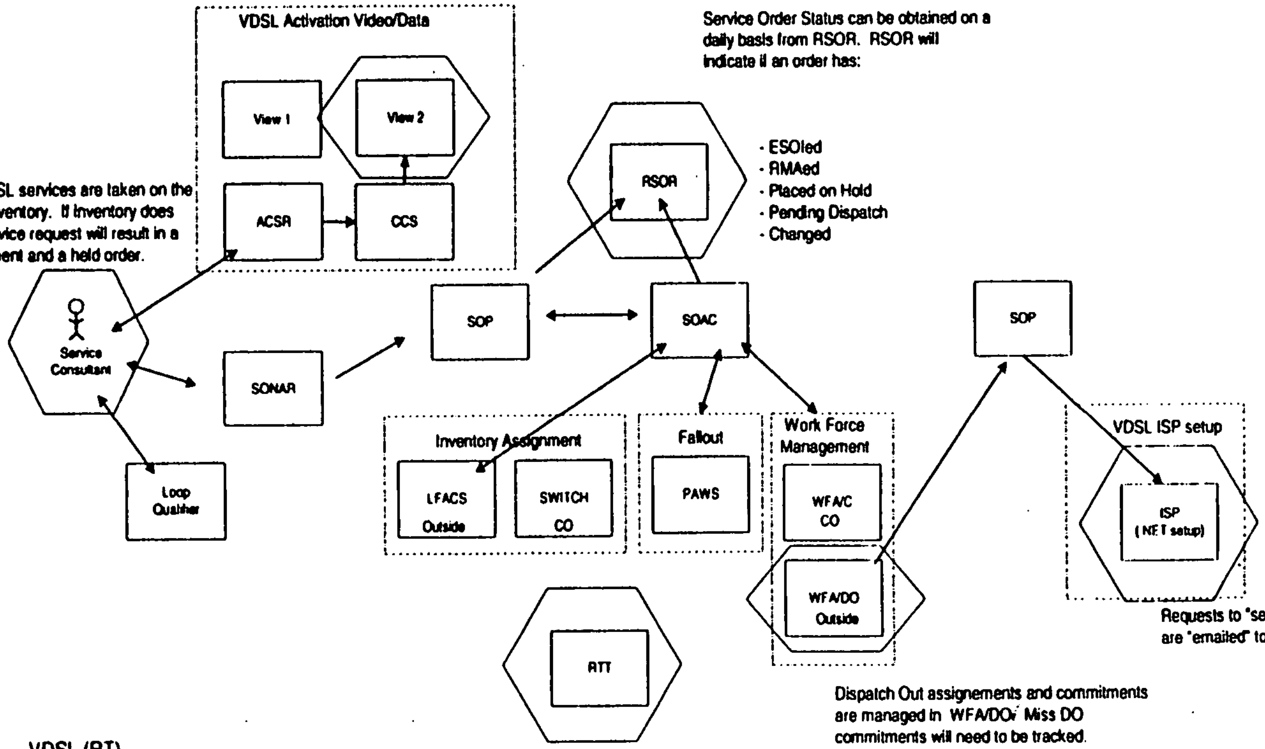
- With all of the disparate processes and organizations involved with providing VDSL service, product ordering assurance is manually intensive to track and reactive, at best.

## Resolution Strategy - 2Q/3Q00

- Collect all relevant data necessary to track the health of a request (or change) of service and proactively report and resolve any order in jeopardy of missing a customer commitment.

## Section II - Featured Area - Detail

# Current Look Product Ordering Assurance



Video/Data activation requests errors will generate alarms in View 1.

Requests for xDSL services are taken on the assumption of inventory. If inventory does not exist, the service request will result in a missed commitment and a held order.

Service Order Status can be obtained on a daily basis from RSOR. RSOR will indicate if an order has:

- ESOIed
- RMAed
- Placed on Hold
- Pending Dispatch
- Changed

Requests to "setup" ISP services are "emailed" to Interprise.

Dispatch Out assignements and commitments are managed in WFA/DO. Miss DO commitments will need to be tracked.

Engineering work orders required to address held services orders (due to plant) are managed in RTT.

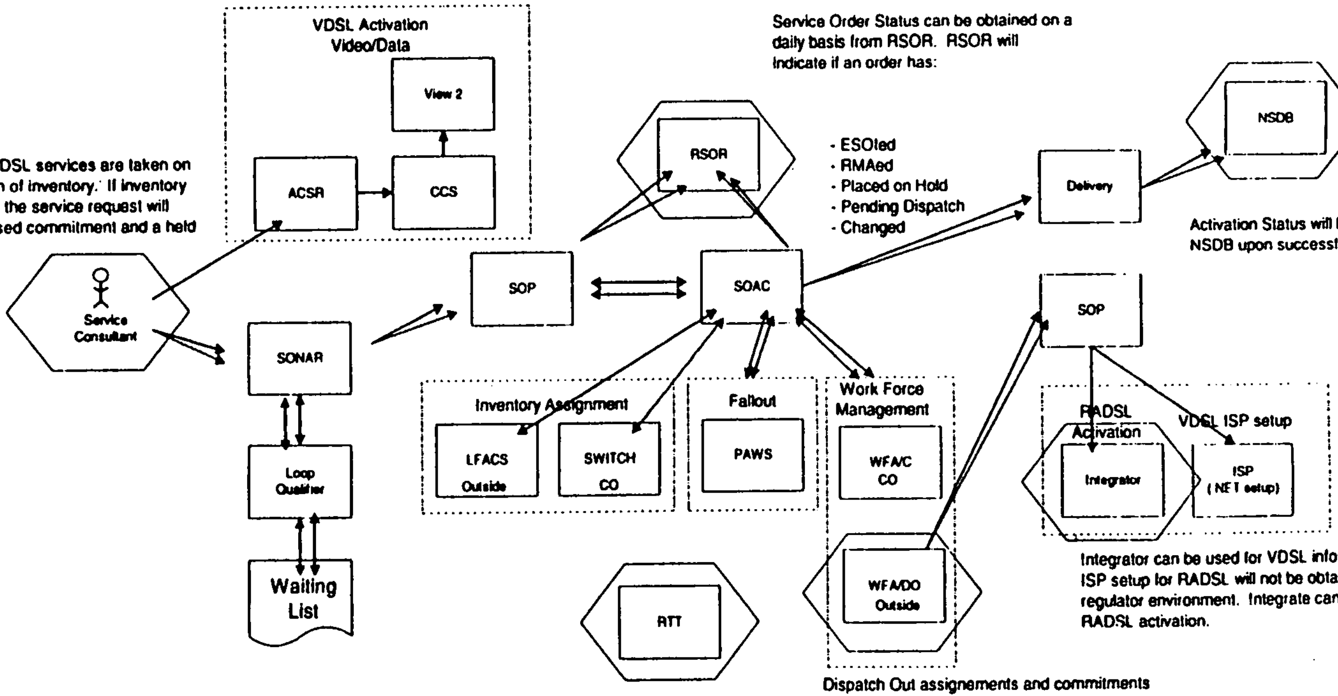
VDSL (RT)

ver 1.0

VDSL

## Section II - Featured Area - Detail

# 2-3Q00 Look Product Ordering Assurance



Requests for xDSL services are taken on the assumption of inventory. If inventory does not exist, the service request will result in a missed commitment and a held order

Service Order Status can be obtained on a daily basis from RSOR. RSOR will indicate if an order has:

- ESOled
- RMAed
- Placed on Hold
- Pending Dispatch
- Changed

Activation Status will be available in NSDB upon successful completion

Integrator can be used for VDSL inform about ISP setup. ISP setup for RADSL will not be obtainable given current regulator environment. Integrate can provide status for RADSL activation.

Engineering work orders required to address held services orders (due to plant) are managed in RTT.

Dispatch Out assignements and commitments are managed in WFA/DO. Miss DO commitments will need to be tracked.

VDSL (RT)

RADSL (CO) assumes Megabit has moved to LFACS/SWITCH for inventory rather then LFACS/TIRKS

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VDSL

[illegible]
Rich [illegible]
[illegible]

# Product Qualification

## Opportunity for Improvement

**A**. Customer Service Consultants do not have the information they need to determine whether or not a customer is eligible to receive VDSL service. They lack...

- Franchise determination
- Right of Entry agreement determination (if business or multiple dwelling unit)
- USAM or BNU build information
- Loop qualification
- Inventory availability (spare cards or slots within the USAM or BNU)

**B**. To provide Marketing with address lists of homes eligible to receive VDSL service, the effort to pre-qualify the addresses is manual

**C**. There is a lack of loop data in existing databases on which to base a qualification decision

**D**. Orders are taken on the assumption of available capacity within the USAM/BNU

## Resolution Strategy - Interim

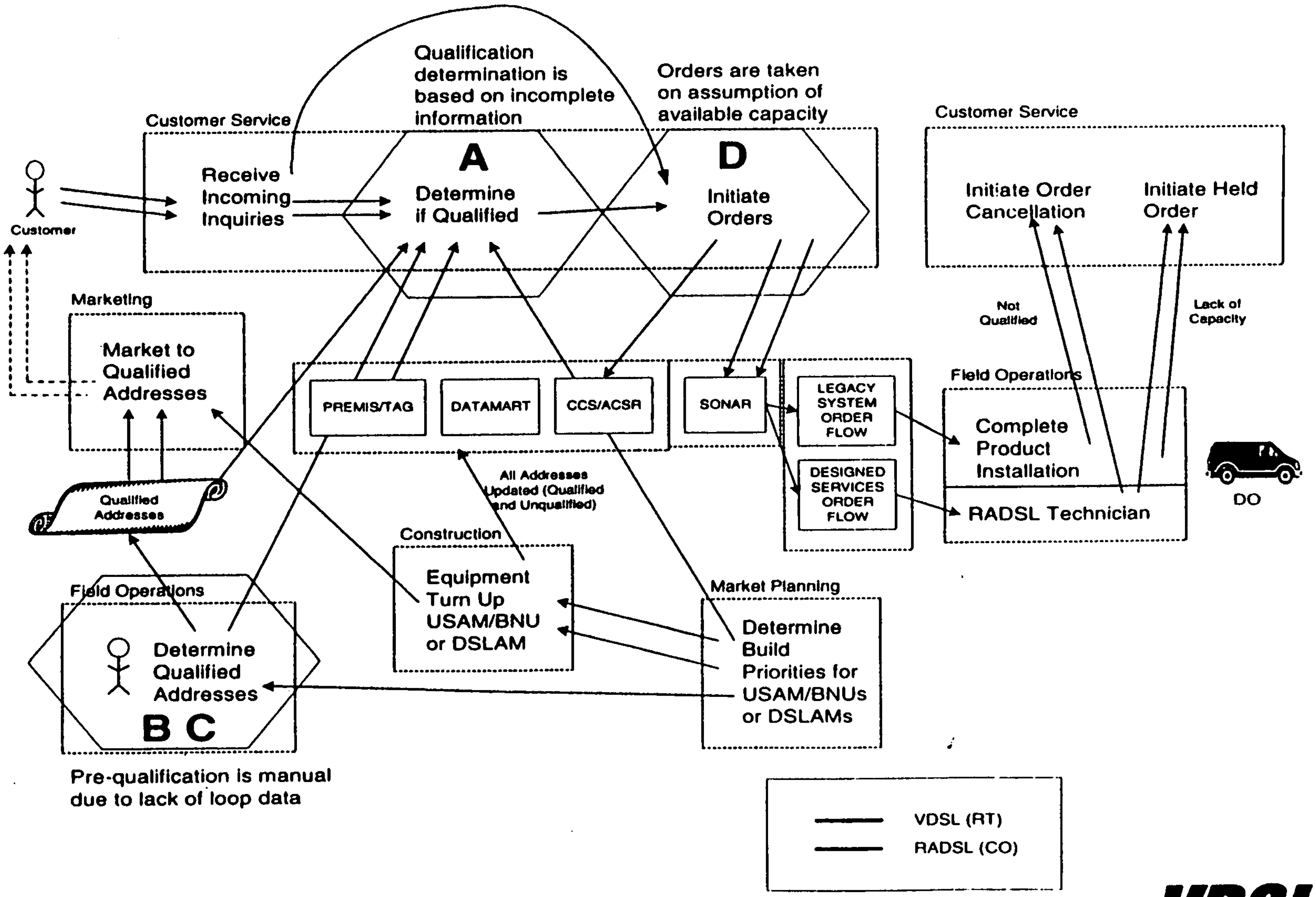
(**1**). Loop Qualification Application will present the Service Consultants with the information needed to determine VDSL qualification including a view of available inventory.

(**2**). The Homes Passed Application will provide the addresses of Homes Passed and of VDSL eligible homes to the Marketing data stores as each USAM or BNU is activated.

(**3**). Loop data including GIS distances and cable make-up information is being collected for use in determining product qualification.

## Section II - Featured Area - Detail

# Current Look Product Qualification



Pre-qualification is manual due to lack of loop data

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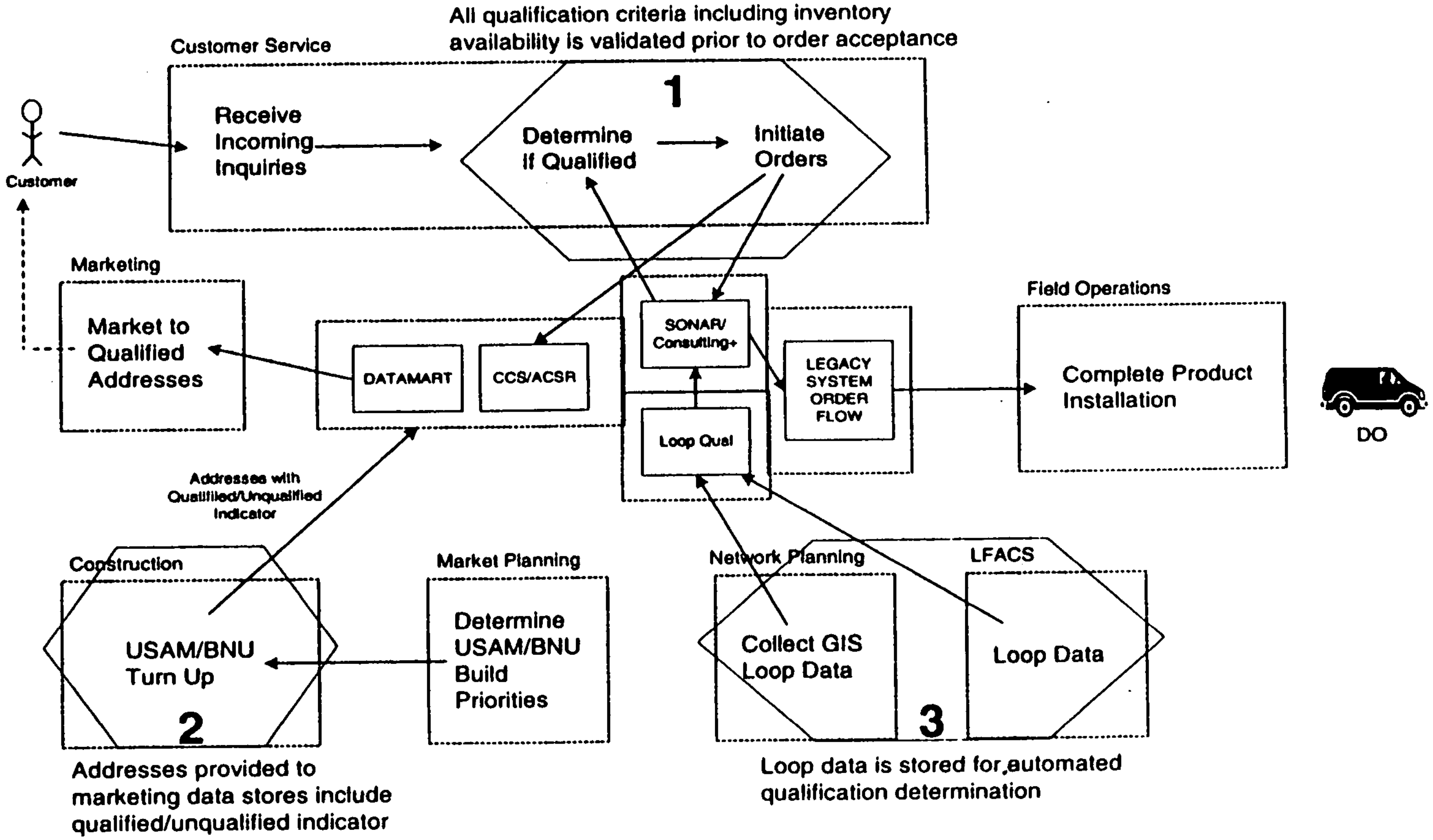
**VDSL**

Roxanna [illegible]
Rich Cerami
Tim [illegible]

# Interim Look - Product Qualification



All qualification criteria including inventory availability is validated prior to order acceptance

Customer

Customer Service

Receive Incoming Inquiries

1

Determine If Qualified

Initiate Orders

Marketing

Market to Qualified Addresses

DATAMART

CCS/ACSR

SONAR/ Consulting+

Loop Qual

LEGACY SYSTEM ORDER FLOW

Field Operations

Complete Product Installation

DO

Addresses with Qualified/Unqualified Indicator

Construction

USAM/BNU Turn Up

2

Market Planning

Determine USAM/BNU Build Priorities

Network Planning

Collect GIS Loop Data

LFACS

Loop Data

3

Addresses provided to marketing data stores include qualified/unqualified indicator

Loop data is stored for automated qualification determination

## Construction and Engineering

Ver 1.0

# Initiative and Deliverable Description I

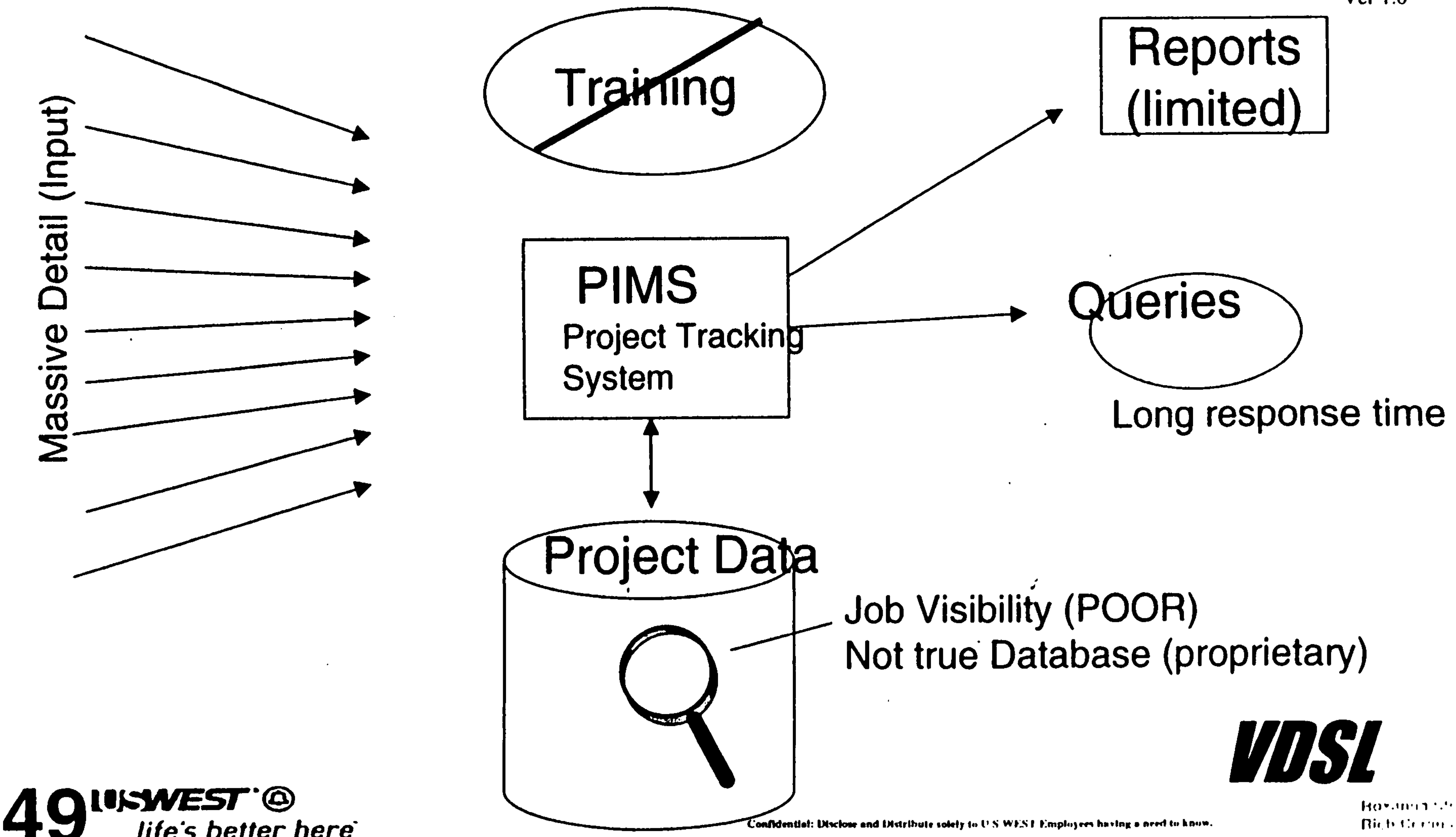
Initiative: Select Program/Project Tracking Tool

Deliverables: Requirements For Tool Selection

## Construction and Engineering

# Current State Picture - PIMS

Ver 1.0



Massive Detail (Input)

~~Training~~

PIMS
Project Tracking
System

Project Data

Reports
(limited)

Queries
Long response time

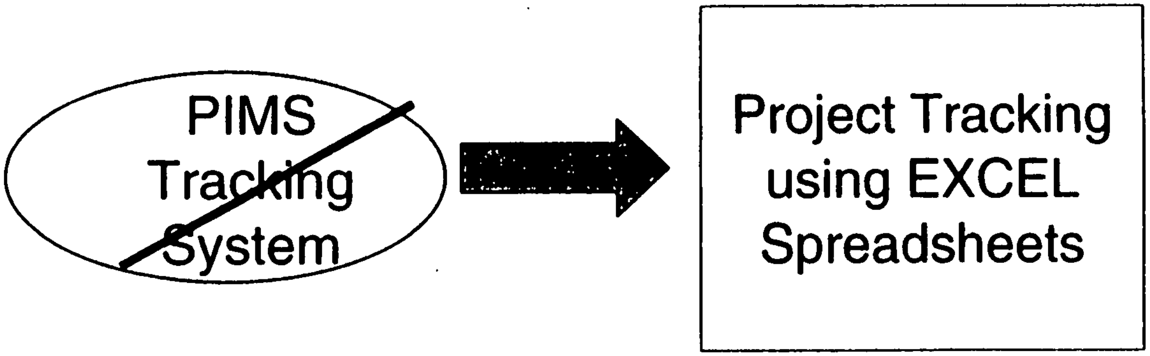
Job Visibility (POOR)
Not true Database (proprietary)

[illegible]
[illegible]
[illegible]

## Construction and Engineering

# Interim State

Ver 1.0



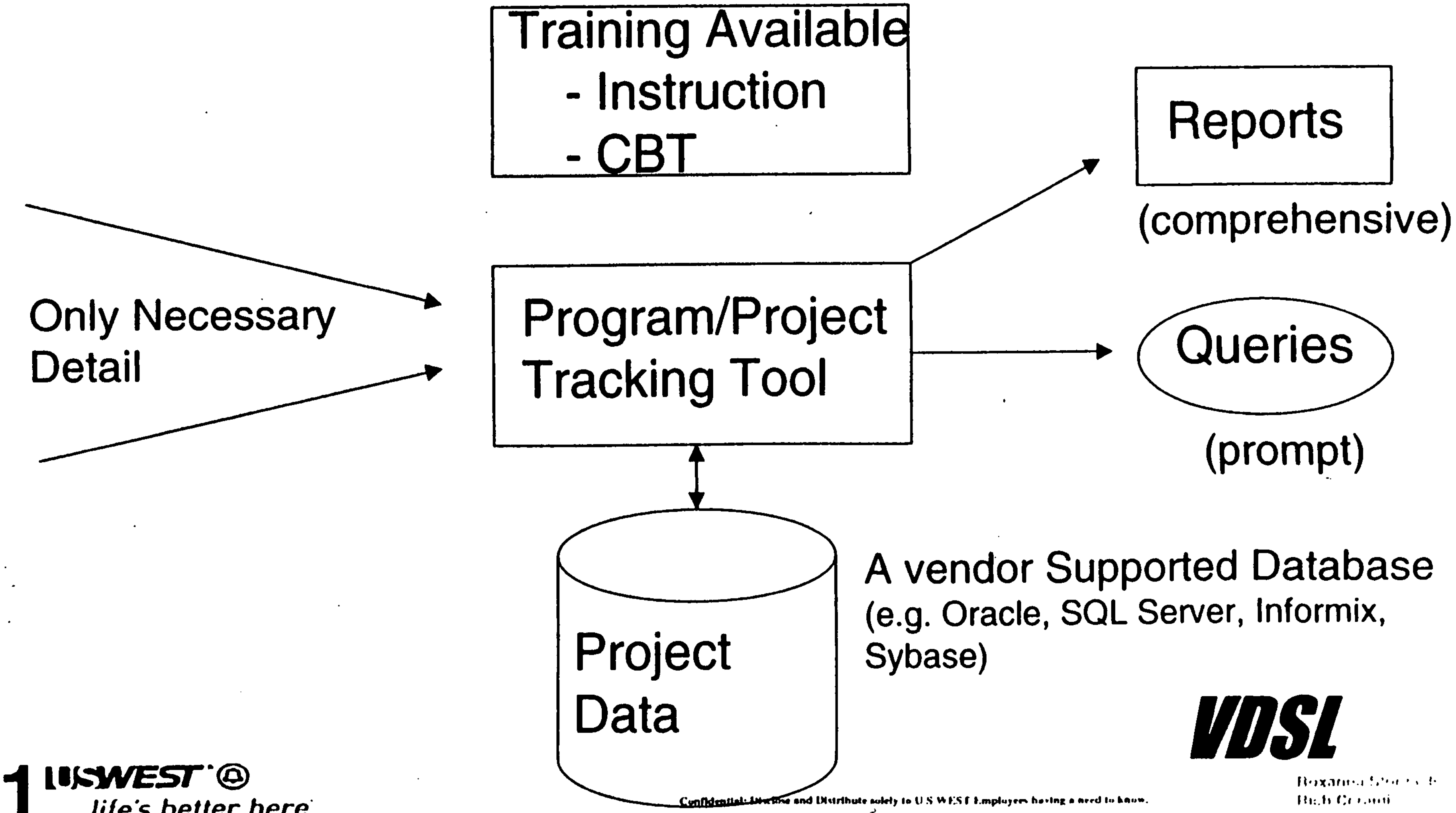
~~PIMS Tracking System~~

Project Tracking using EXCEL Spreadsheets

## Construction and Engineering

# Optimal State

Ver 1.0



Training Available
- Instruction
- CBT

Only Necessary Detail

Program/Project Tracking Tool

Reports (comprehensive)

Queries (prompt)

Project Data

A vendor Supported Database (e.g. Oracle, SQL Server, Informix, Sybase)

VDSL

Roxanna [illegible]
Rich Cerami
Jim [illegible]

## Construction and Engineering

# Initiative and Deliverable Description II

Ver 1.0

Initiative: Apply the core process and systems to VDSL

Deliverables:

- Documentation of core process and usage in Denver
- Documentation of core process and usage in Phoenix VDSL
- Gap analysis between Denver and Phoenix
- Transition plan for Phoenix VDSL

VDSL

## Construction and Engineering

# Initiative and Deliverable Description III

Ver 1.0

Initiative:

- Apply VDSL best practices to core process and systems

Deliverables:

- Transition Plan for Denver core process and systems

# Fault Management Business Value

The goal of a fault management strategy is to achieve a proactive repair strategy that leverages the inherent intelligence in the network to resolve service affecting problems before the customer is impacted.

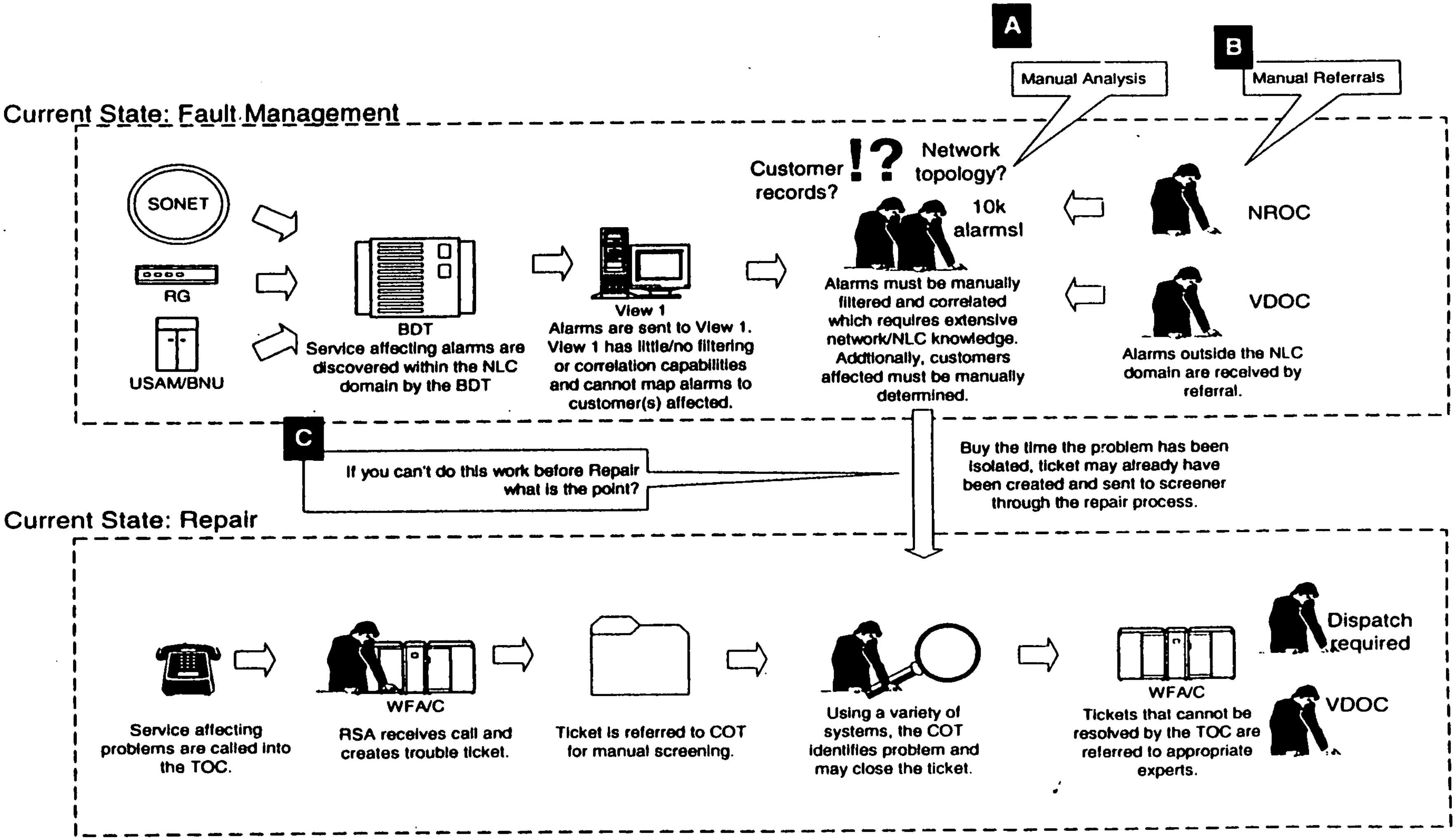
Ver 1.0

## Business Value

- Improve customer satisfaction through an improved quality of service (less service affecting outage & better knowledge to support staff)
- Reduce the number of repair calls by 30% (proactively fix problems)
- Reduce RSA time by 50% (through auto-creation of tickets)
- Better/Quicker problem isolation capability

## Section II - Featured Area - Detail

# Fault Management Current State



A

Manual Analysis

B

Manual Referrals

Current State: Fault Management

SONET

RG

USAM/BNU

BDT
Service affecting alarms are discovered within the NLC domain by the BDT

View 1
Alarms are sent to View 1. View 1 has little/no filtering or correlation capabilities and cannot map alarms to customer(s) affected.

Customer records? !? Network topology?

10k alarms!

Alarms must be manually filtered and correlated which requires extensive network/NLC knowledge. Addtionally, customers affected must be manually determined.

NROC

VDOC

Alarms outside the NLC domain are received by referral.

C

If you can't do this work before Repair what is the point?

Buy the time the problem has been isolated, ticket may already have been created and sent to screener through the repair process.

Current State: Repair

Service affecting problems are called into the TOC.

WFA/C
RSA receives call and creates trouble ticket.

Ticket is referred to COT for manual screening.

Using a variety of systems, the COT identifies problem and may close the ticket.

WFA/C
Tickets that cannot be resolved by the TOC are referred to appropriate experts.

Dispatch required

VDOC

Conclusion: No need to look at alarms in View 1 as service affecting alarms will be phoned in as repair problems by customers BEFORE alarms can be resolved within fault management- reactive repair model

VDSL

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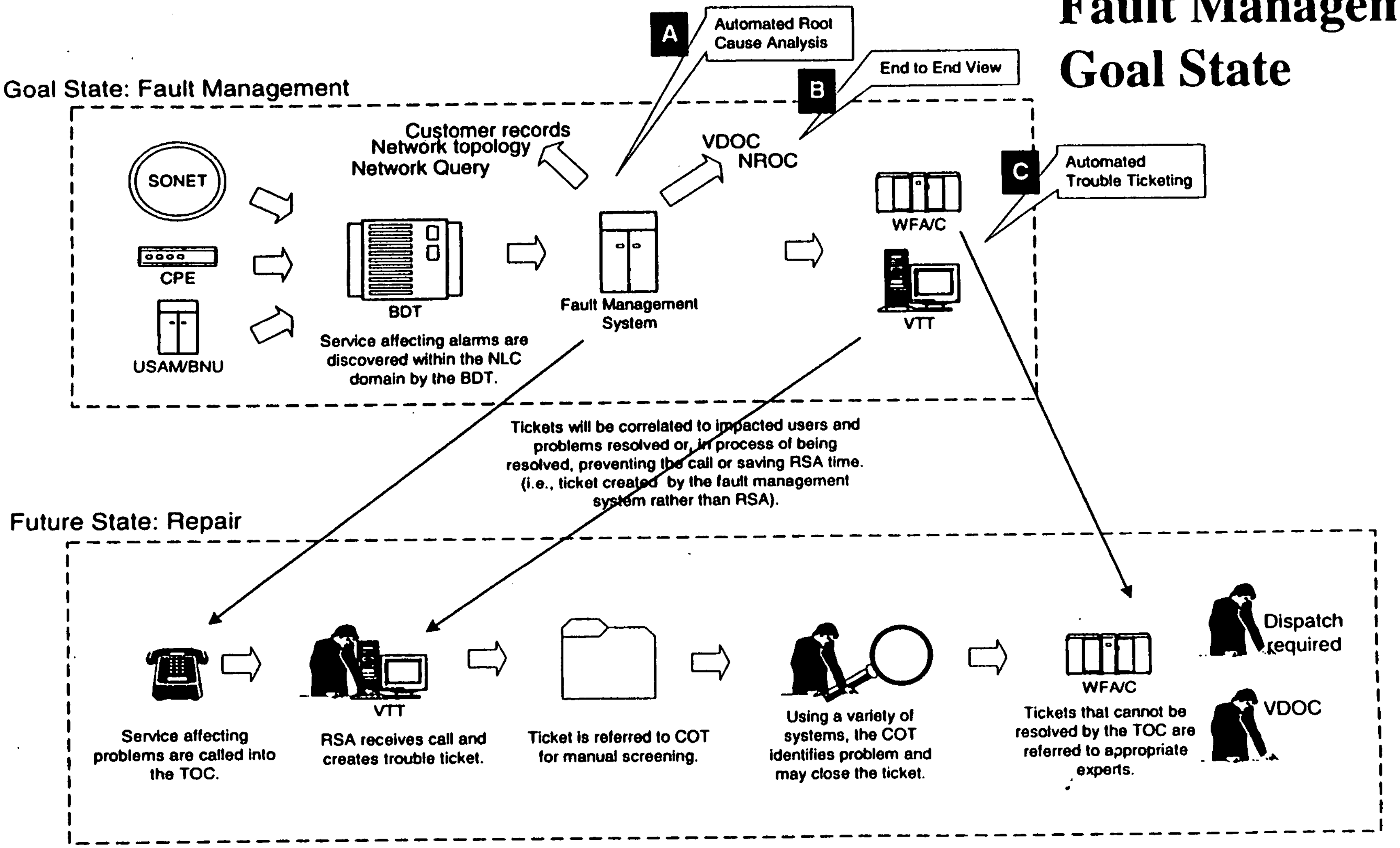
[illegible]

# Fault Management Goal State



A: Automated Root Cause Analysis

B: End to End View

C: Automated Trouble Ticketing

Goal State: Fault Management

SONET

CPE

USAM/BNU

Customer records
Network topology
Network Query

BDT

Service affecting alarms are discovered within the NLC domain by the BDT.

Fault Management System

VDOC
NROC

WFA/C

VTT

Tickets will be correlated to impacted users and problems resolved or, in process of being resolved, preventing the call or saving RSA time. (i.e., ticket created by the fault management system rather than RSA).

Future State: Repair

Service affecting problems are called into the TOC.

VTT

RSA receives call and creates trouble ticket.

Ticket is referred to COT for manual screening.

Using a variety of systems, the COT identifies problem and may close the ticket.

WFA/C

Tickets that cannot be resolved by the TOC are referred to appropriate experts.

Dispatch required

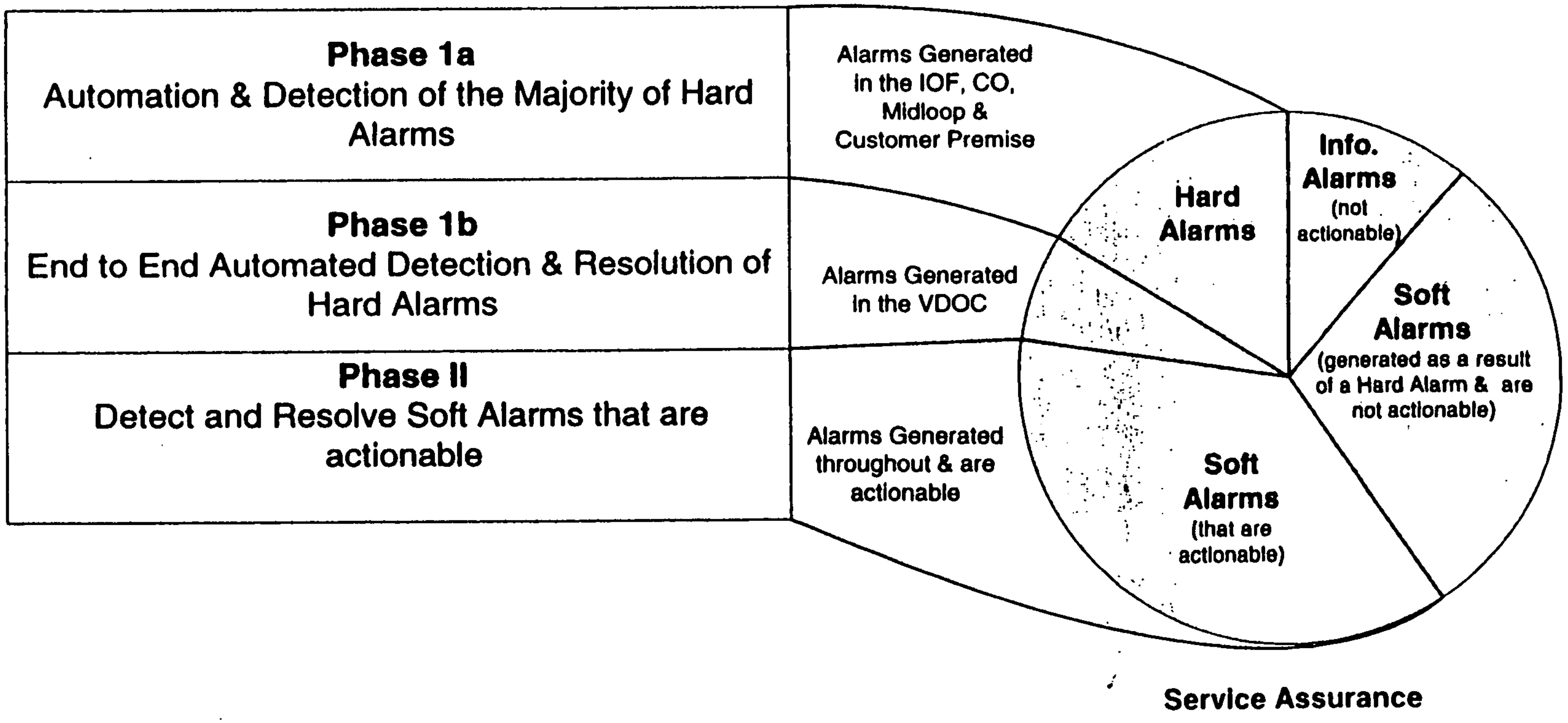
VDOC

Conclusion: Service affecting alarms will be isolated and/or resolved BEFORE a customers calls in a compaint - proactive repair model.

**VDSL**

# Fault Alarm Proposal

## Service Assurance Alarm Resolution Plan



**Phase 1a**
Automation & Detection of the Majority of Hard Alarms

**Phase 1b**
End to End Automated Detection & Resolution of Hard Alarms

**Phase II**
Detect and Resolve Soft Alarms that are actionable

Alarms Generated in the IOF, CO, Midloop & Customer Premise

Alarms Generated in the VDOC

Alarms Generated throughout & are actionable

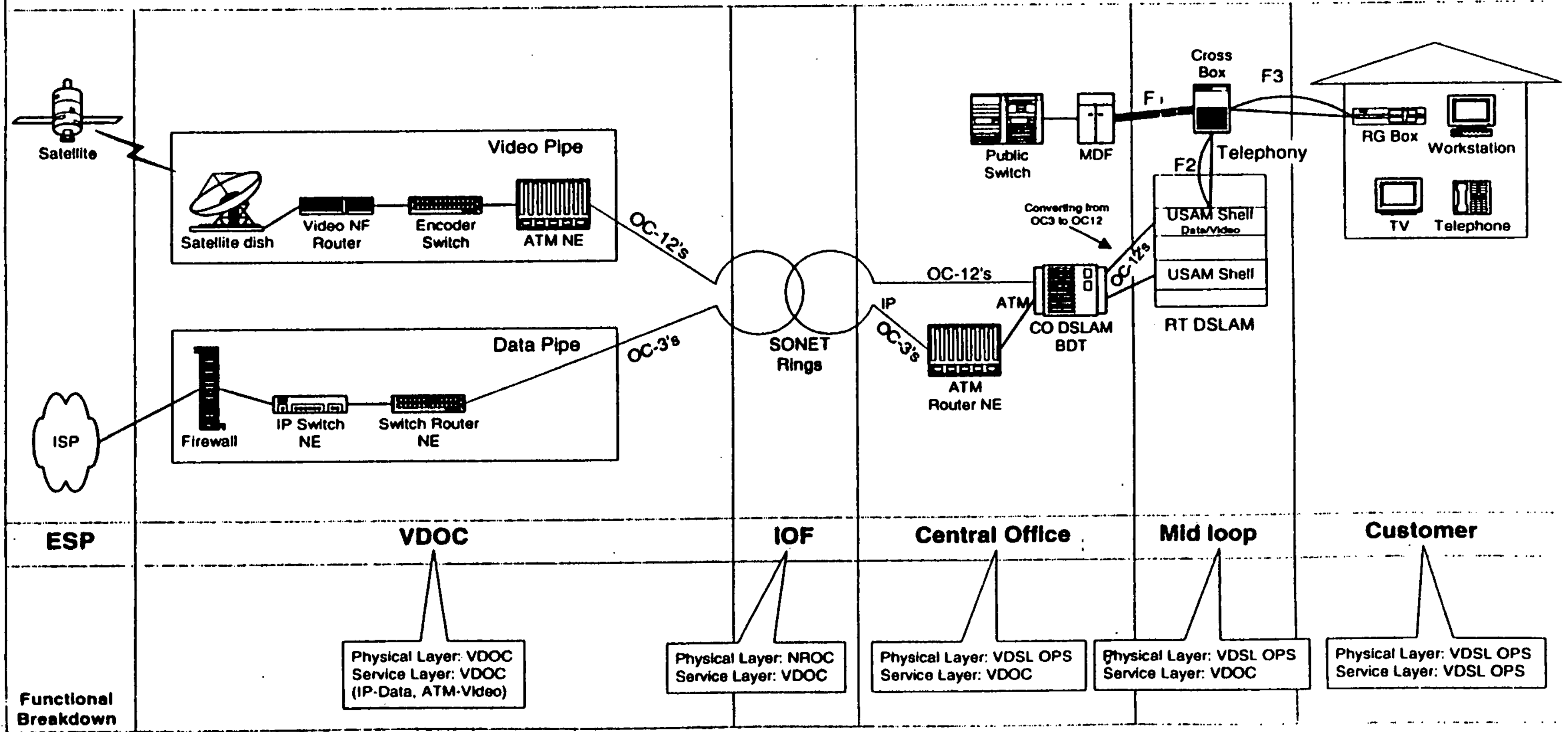
**Service Assurance**

Rich Cerami
Tim Figueroa

Ver 1.0
03/02/00

# End to End Fault Management View

## Phase 1b End to End Alarm Horizon and Current Functional Breakdown



| VDOC | IOF | Central Office | Mid loop | Customer |
|---|---|---|---|---|
| Physical Layer: VDOC<br>Service Layer: VDOC<br>(IP-Data, ATM-Video) | Physical Layer: NROC<br>Service Layer: VDOC | Physical Layer: VDSL OPS<br>Service Layer: VDOC | Physical Layer: VDSL OPS<br>Service Layer: VDOC | Physical Layer: VDSL OPS<br>Service Layer: VDSL OPS |

Rich Cerami
Tim Figueroa

FTTN - Fiber to the Node
ESP - External Service Providers
VDOC - Video/Data Operations Center
IOF - Inter-Office Facilities

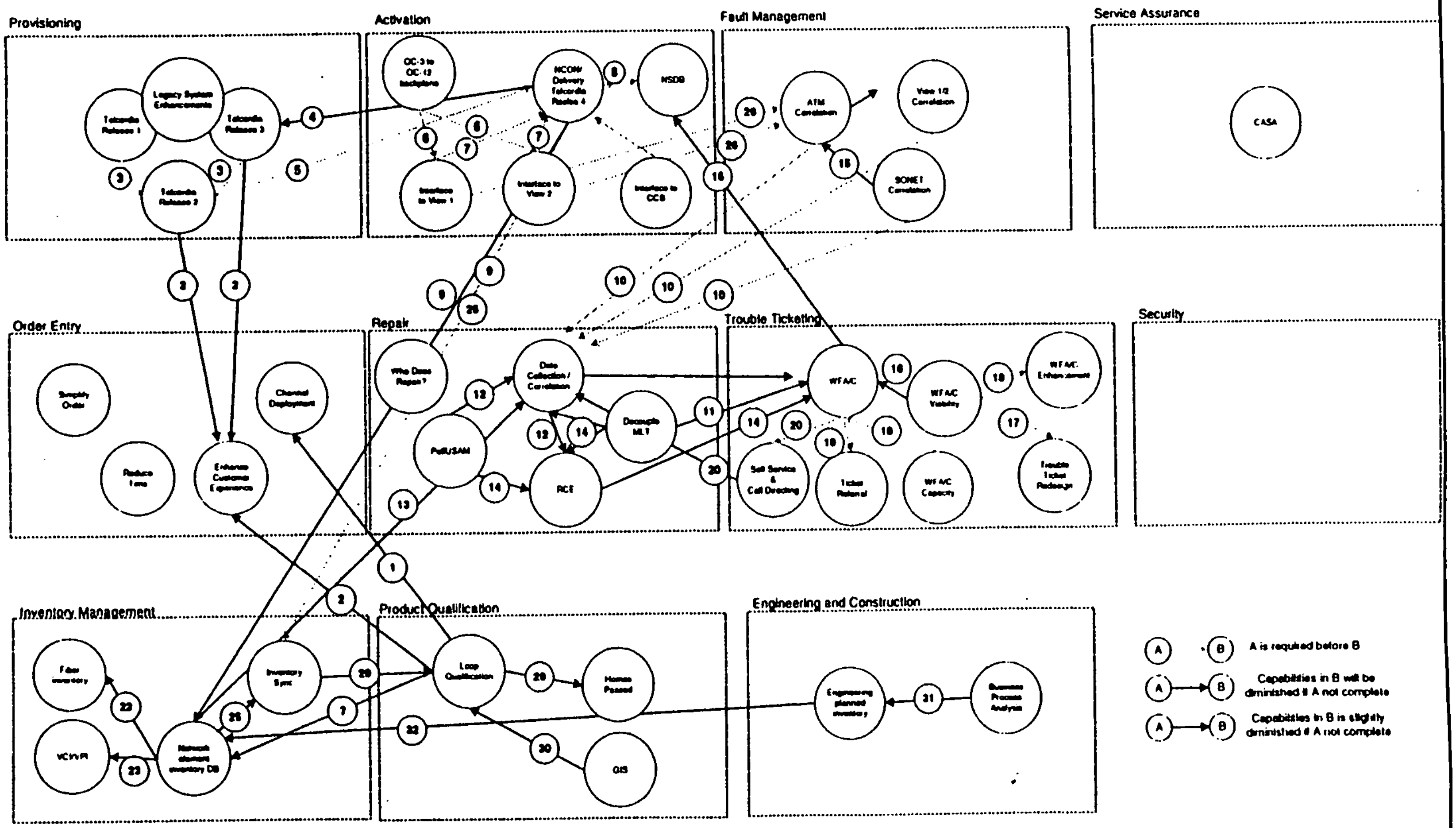
Ver 2.0
03/06/00

# Conclusion

- The VDSL Systems approach is organized and disciplined with a focus on deliverables
  - The Program Office is a key Client resource and interface
    - The Blueprint and Framework model leads to a single understanding of deliverables that will satisfy the Business Need
      - We value inter-organizational coordination and cooperation as a key to VDSL systems success
        - Roxanna Storaasli leads the VDSL Systems team that is responsible for all VDSL Systems & Deliverables

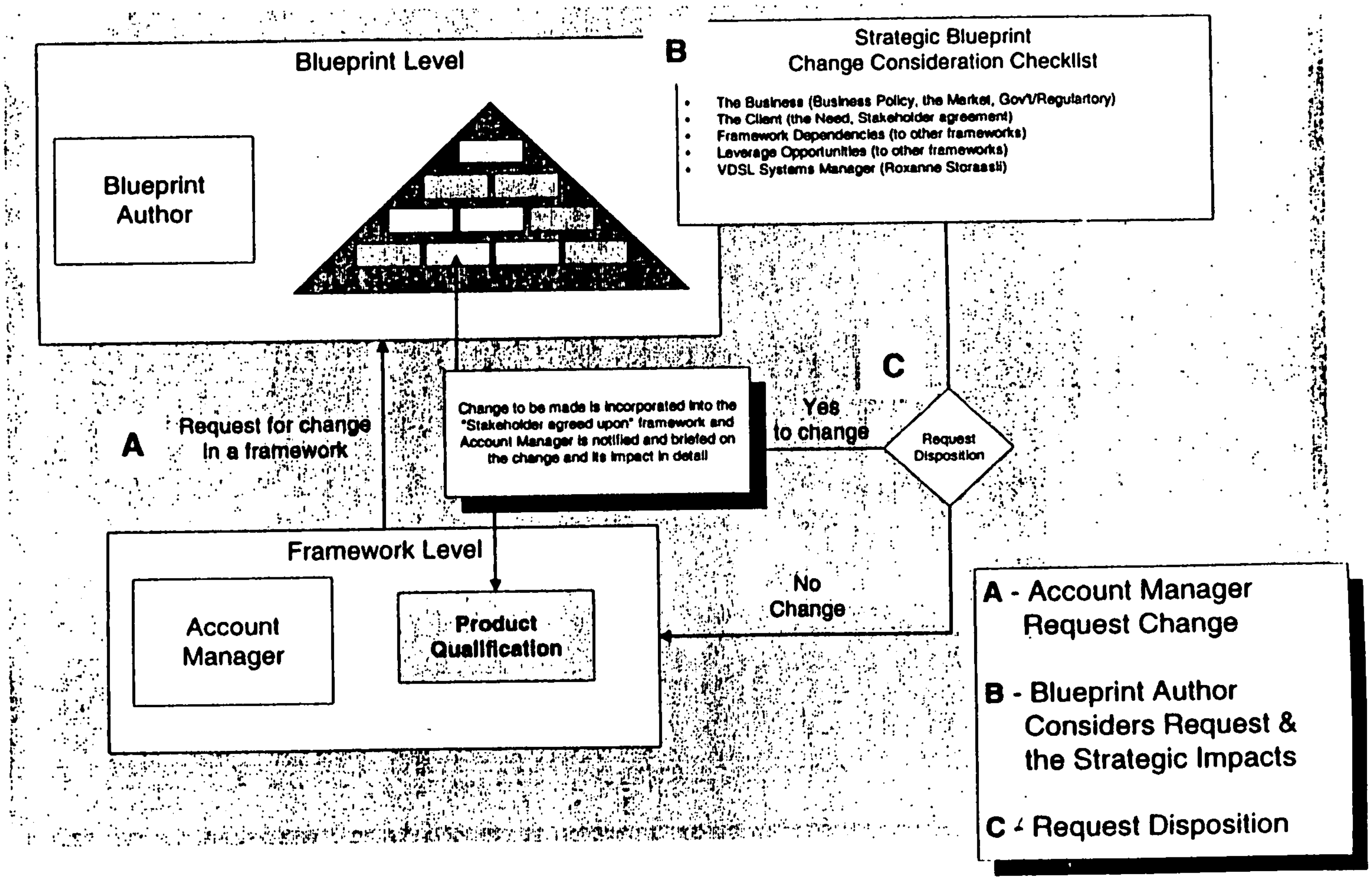
# Appendix A

VDSL Framework Dependency Diagram



Ver 3.0 01/07/00, Rich
Cerami, Tim Figueroa

# Framework Change Process



Blueprint Level

Blueprint Author

**B** Strategic Blueprint Change Consideration Checklist

- The Business (Business Policy, the Market, Gov't/Regulatory)
- The Client (the Need, Stakeholder agreement)
- Framework Dependencies (to other frameworks)
- Leverage Opportunities (to other frameworks)
- VDSL Systems Manager (Roxanne Storassli)

**A** Request for change in a framework

Change to be made is incorporated into the "Stakeholder agreed upon" framework and Account Manager is notified and briefed on the change and its impact in detail

**C** Request Disposition

Yes to change

No Change

Framework Level

Account Manager

**Product Qualification**

**A** - Account Manager Request Change

**B** - Blueprint Author Considers Request & the Strategic Impacts

**C** - Request Disposition

The change process insures a single, coordinated and integrated framework architecture that all parties understand and have agreement on.

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VDSL

Roxanne Storassli
Rich [illegible]
Jim [illegible]

# VDSL System Plan

| **Business Process**<br>• **Projects** | VDSL Issues | Current Implementation | Future Implementation | Timeframe |
|---|---|---|---|---|
| **Service Delivery**<br>• **Consulting +**<br>• **Telcordia** | • Two separate flows for VDSL service orders<br>• Time to enter multiple orders – 30" per customer | • Separate market deployments driving three types of Service Request<br>- Telephony (POTS & DLC)<br>- VDSL<br>- RADSL | • Build a single order source to support xDSL mass market deployment | June 2000 |
| **Provisioning**<br>• **Telcordia Changes (NCON)** | • Manual input of data into LFACs via LPC for all equipment turn up<br>• 100% of orders fall out of LFACs | • Existing POTS legacy system flow | • Resolve all manual processes inherent in legacy flow (e.g., loop makeup and re-use) | June 2000 |
| **Activation**<br>• **NCON/Delivery**<br>• **NLC View 1**<br>• **NLC View 2** | • Activation for VDSL currently in standalone vendor system | • Separate market deployments driving three types of Service Request<br>- Telephony (POTS & DLC)<br>- VDSL<br>- RADSL | • Build re-usable activation conduits for one service request<br>- Logical (services)<br>- Physical (network plant)<br>- Network transport (ATM) | June 2000 |
| **Fault Management**<br>• **INM**<br>• **Mediation Gateway** | • EMS tool is impractical for alarm management – its reactive fault management | • Using Element Management System for DLC and VDSL<br>• Using NMS for POTS<br>• Using Open View for RADSL | • Mediation Gateway to filter and distribute alarms<br>• Nortel – Network Management System for all access solutions (INM) | April 2000<br>June 2000 |

Roxanne [illegible]
Rich [illegible]
[illegible]

# VDSL System Plan

| **Business Process**<br>• **Projects** | VDSL Issues | Current Implementation | Future Implementation | Timeframe |
|---|---|---|---|---|
| **Repair**<br>• **RCE**<br>• **Poll USAM** | • Repair process laborious and inefficient<br>• Requires incomplete network element information, trouble ticket information<br>• Incomplete correlation of BDT, USAM and ATM Failure | • Based on POTS legacy system flow | • Introduce proactive repair model for xDSL services | June 2000 |
| **Product Qualification**<br>• **GIS**<br>• **Insertion Loss**<br>• **LFACs Link** | • Correlation between loop qualification database and available inventory | • Currently systems qualify ~85% of loops within a VDSL franchise and ~50% for RADSL<br>• | • Incorporate GIS distances and insertion loss to improve qualification<br>• Integrate and automate available network inventory data with loop qualification data. This will support sales to qualified customers where inventory is available | November 1999<br>June 2000 |
| **Inventory**<br>• **GUI Access**<br>• **Robust Inventory Management** | • Inventory database not provisionalized<br>• Inventory in assignment system lags inventory database | • Inventory systems updated manually | • Automated Inventory synchronization driven by the network | 2nd -3rd Qtr 2000 |
| **Construction/ Engineering**<br>• **Construction Management Tool** | • Hindered by manually reconciled spread sheets<br>• PIM tool unusable<br>• NECTAS doesn't satisfy needs | • Currently using spreadsheets that track common activities<br>• Common reporting tool | • Mature processes and define dependencies<br>• Implement a single tool to integrate data that support new processes | January 2000 |

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VDSL

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Rich [illegible]
Tim Figueroa

# VDSL Program Office Audit Review Area

| Activity | Description |
|---|---|
| Tracking and Scheduling | Summarize individual project plans and report to stakeholders<br>Develop and manage master program plan<br>Manage scope & project boundaries: Identify, agree, and manage cross project dependencies<br>Coordinate timelines, resources, deliveries, etc., across projects |
| Financial Management | Summarize individual project financial plans and report to stakeholders<br>Standardize accounting practices across projects<br>Provide objective oversight into budgeting decisions |
| Issue Management and Risk Management | Identify and prioritize issues and risks<br>Summarize/abstract risks for stakeholders, look for patterns across projects<br>Mediate issue and risk escalation across projects<br>Escalate issues and risks to stakeholders for executive action<br>Communicate issues and risks to projects for resolution and mitigation<br>Provide objective oversight into analysis of risk mitigation strategies |
| Resource Management | Develop and agree program level roles and responsibilities<br>Identify and assist with the resolution of key staffing issues<br>Provide objective oversight to staffing policies and decisions<br>Develop program wide staffing plan |
| Quality Management | Develop requirements tracking process for program/projects<br>Develop quality assurance guidelines for program/projects<br>Define program wide metrics and targets, perform benchmarks and audits<br>Provide integration level QA |
| Stakeholder Management | Plan and execute a communication initiative<br>Identify and manage stakeholders, especially executive stakeholders<br>Manage contracts, internal communications, etc. |
| Third Party Relations | Negotiate and manage strategic alliances/selected vendors, etc.<br>Support key customer management<br>Develop external communications plan |